

Commodore

LPS 2000

Service Manual

11/89



MAINTENANCE MANUAL

LPS 2000 LASER PRINTER

NOVEMBER 1989

CAUTION

This laser printer is a class 1 laser product that complies with 21CFR 1040.10 and 1040.11 of the CDRH standard and IEC825. This means that this machine does not produce a hazardous laser radiation. The use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

This laser radiation is not a danger to the skin, but when the laser beam is exactly focused on the eye's retina, there is danger of spot damage to the retina. The following cautions must be observed to avoid exposure of the laser beam to your eyes at the time of servicing.

When a problem in the laser optical unit has occurred, the whole optical unit must be exchanged as a unit, not as individual parts.

Do not look into the machine with the power switch turned on after removing the developer unit, toner cartridge, and drum cartridge.

Do not look into the laser beam exposure slit of the laser optical unit with the connector connected when removing and installing the optical system.

The upper frame contains the safety interlock switch. Do not override the safety interlock by inserting wedges or other items into the switch slot.

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INTRODUCTION

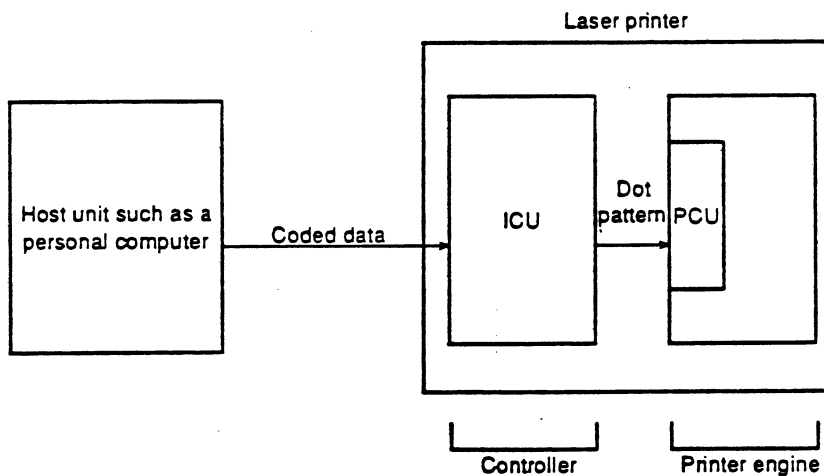
SECTION 1. INTRODUCTION

INTRODUCTION AND OVERVIEW

The printer consists of two major blocks--the controller and the print engine. The controller consists of the ICU (Interface Control Unit) which interprets the source print data to create dot pattern information based on the font. The print engine prints the data of the dot pattern information.

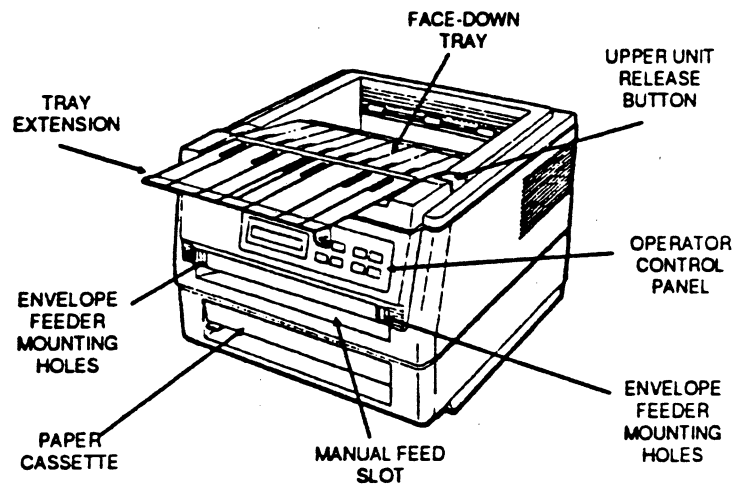
The print engine includes the laser/optical unit, drum and developer cartridges, and paper feed mechanisms. The print engine mechanisms are controlled by the PCU (Process Control Unit).

This section of the manual describes the overall print process, laser/optical unit, fuser unit functions, and the paper feed and transport process. The block diagram below is a simplified overview of the major blocks.

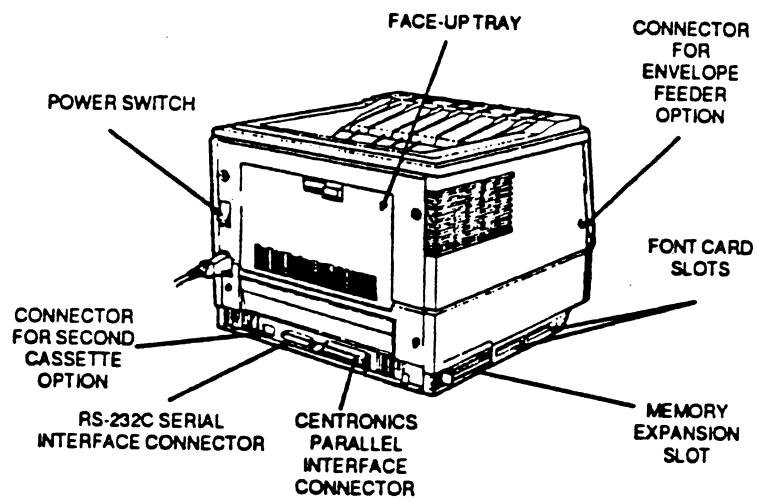


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Front View

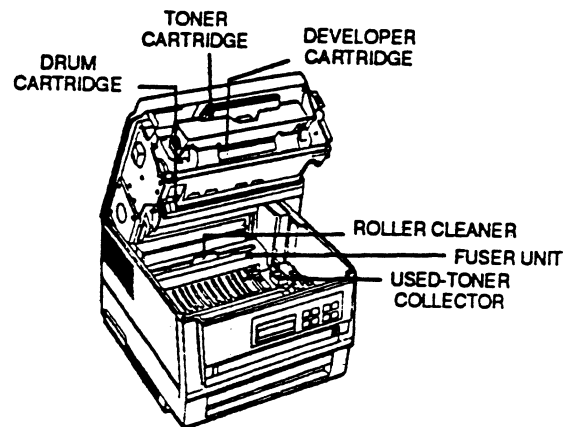


Rear View

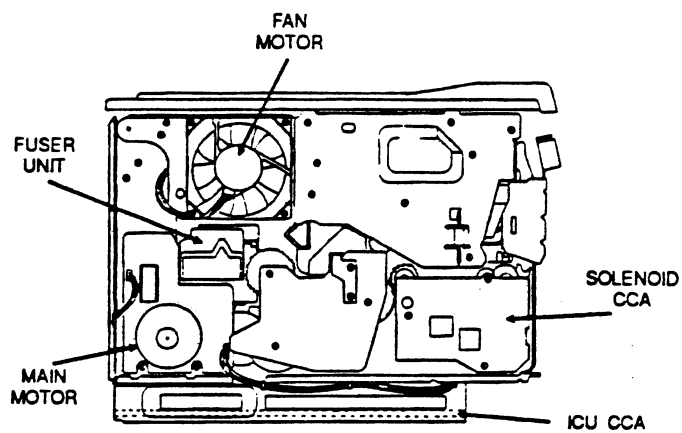


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Interior

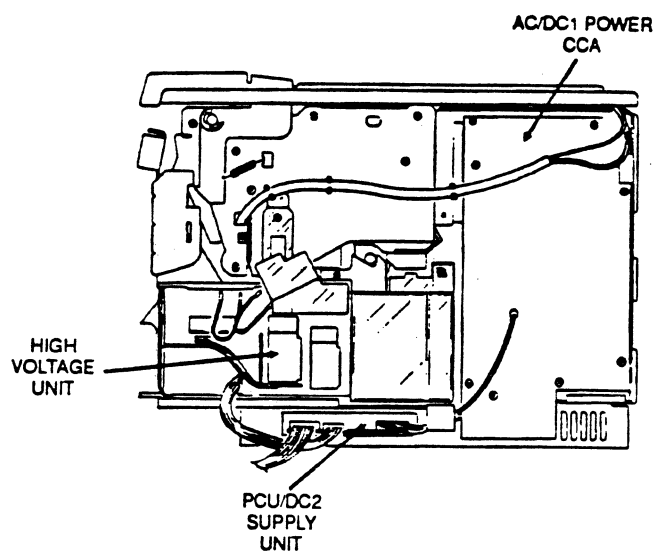


Left Side Section

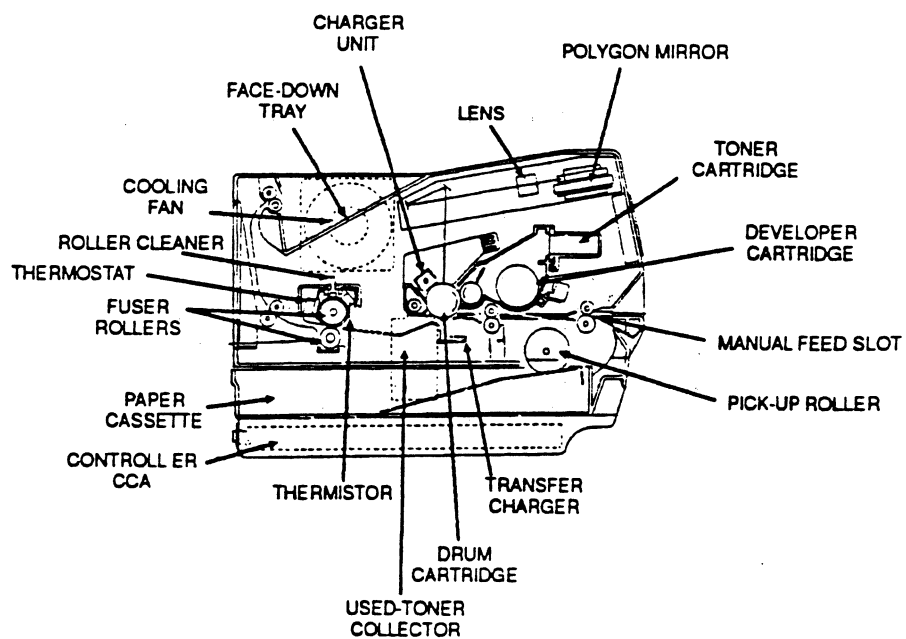


INTRODUCTION

Right Side Section

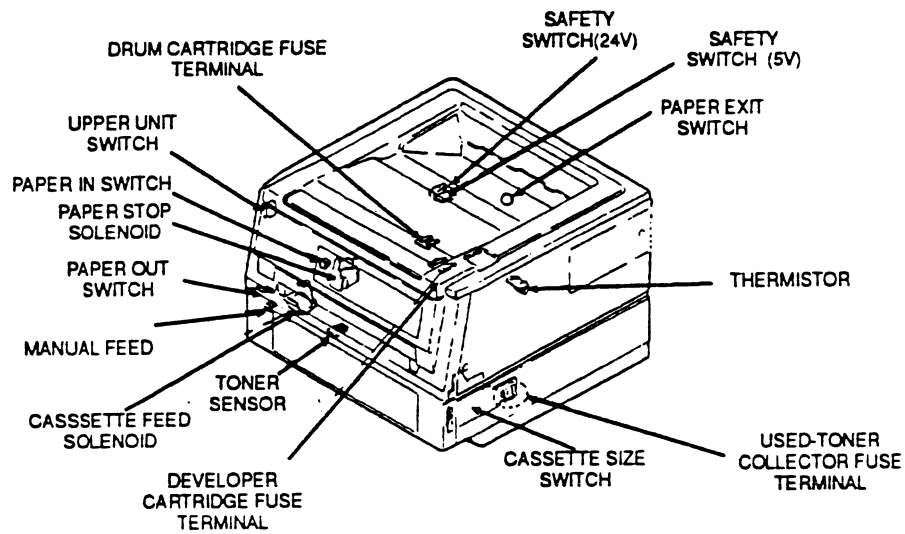


Cross Section

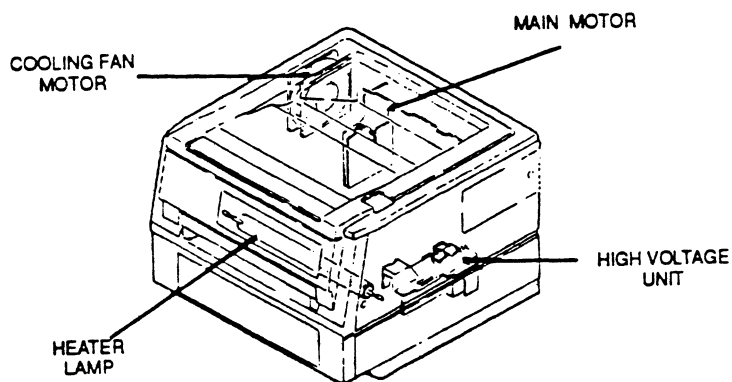


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Switch, Sensor, Solenoid Locations



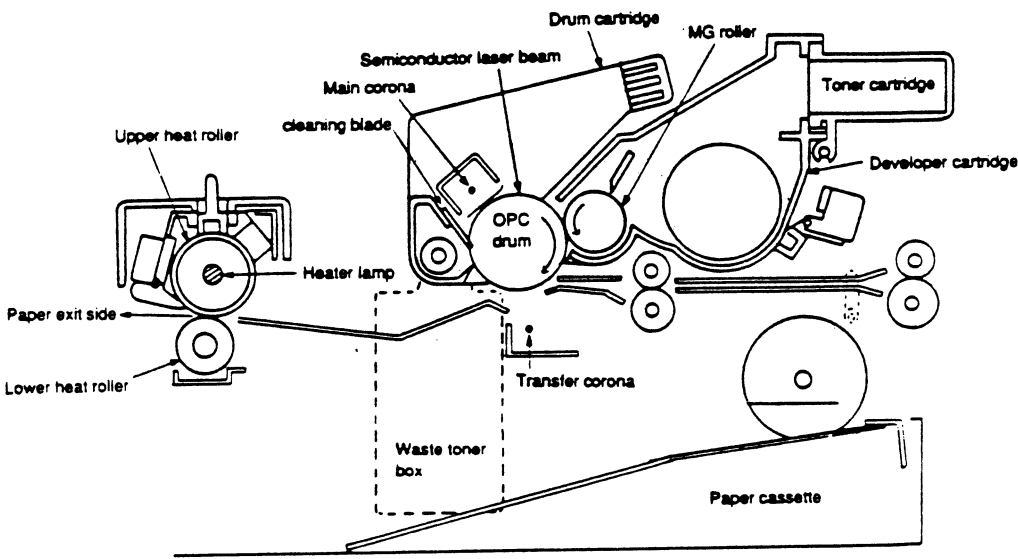
Motor, Transformer, Lamp Locations



INTRODUCTION

PRINT PROCESS

The illustrations below show the assemblies involved in the print process and the print process cycle.



(Basic operation cycle)

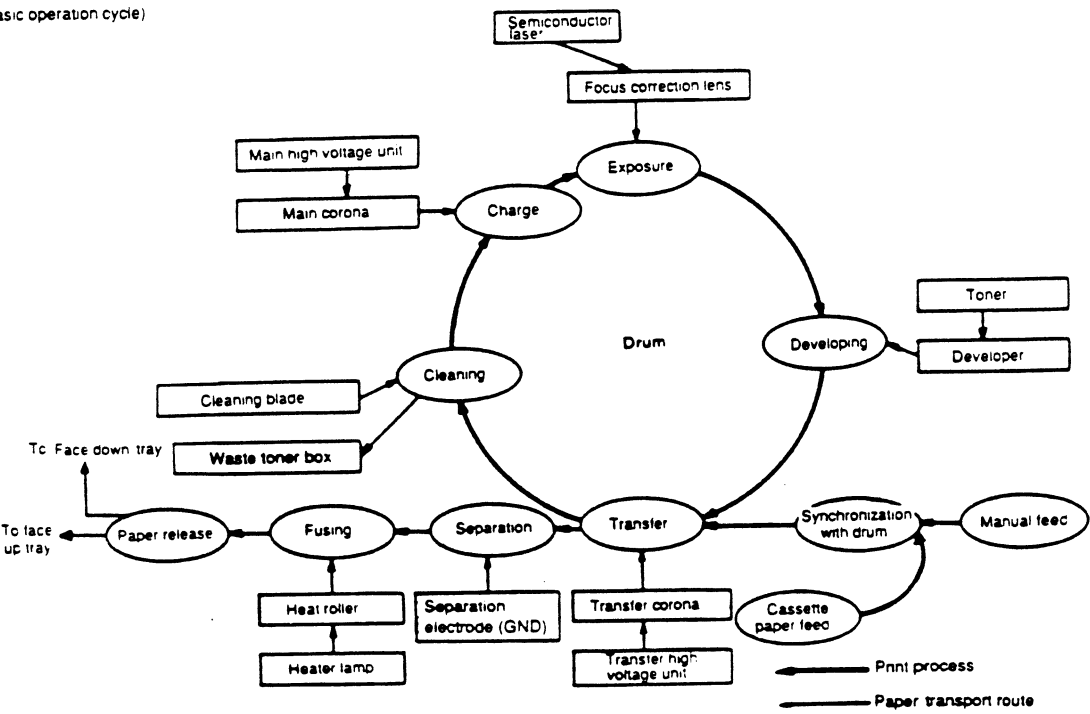


IMAGE FORMING PROCESS

The printer uses a semiconductor laser electrostatic print process and an OPC (Organic Photo Conductor) for its photoconductive material. The main charger unit charges the drum surface and a latent image is formed on the drum surface using a laser beam. This latent image forms a visible image on the drum surface with toner. The toned image is then transferred to the paper by the transfer charger and fixed on the paper by the fuser heat and roller pressure.

- Step-1: Charge Drum surface is given an even negative charge.
- Step-2: Exposure Latent image is formed on the drum.
- Step-3: Developing Latent image formed on the drum is then changed into visible image with toner.
- Step-4: Transfer The visible image (toner image) on the drum is transferred onto the print paper.
- Step-5: Cleaning Residual toner on the drum surface is collected by the cleaning blade.
- Step-6: Discharge Residual charge on the drum surface is removed by semiconductor laser beam.

Step-1: DC Charge

A uniform negative charge is applied over the OPC drum surface by the main charger unit. Stable potential is maintained by means of the Scorotron charger. Positive charges are generated in the aluminum layer.

Step-2: Exposure (Laser Beam, Mirror, Lens)

A laser beam is generated from the semiconductor laser with the print pattern signal. It is exposed onto the drum surface through the mirror and lens. The resistance of the OPC layer decreases for an area exposed by the laser beam (corresponding to the print pattern signal). The beam neutralizes the negative charge. The electrostatic latent image is formed on the drum surface.

Step-3: Developing (DC bias)

A bias potential is applied to the magnetic roller in the two component magnetic brush developing method, and the toner is charged negative through friction with the carrier. The non-image area of the drum surface charged with a negative potential repels the toner. The bright exposed portions where no negative charges exist are developed by the toner. As a result, a visible image appears on the drum surface. A small quantity of carrier is on the sleeve. Toner is attracted over the shadowed area because of the developing bias.

INTRODUCTION

Step-4: Transfer

The visible image on the drum surface is transferred onto the paper by applying a positive charge from the transfer charger to the back of the paper.

Step-5: Cleaning

Toner remaining on the drum is collected by the cleaner blade and transported to the used-toner collector by the used-toner transport screw.

Step-6: Optical Discharge (Semiconductor Laser)

Before drum rotation is stopped, the semiconductor laser is radiated onto the drum to reduce the electrical resistance in the OPC layer and eliminate any residual charge. This provides a uniform drum surface. When the electrical resistance is reduced, positive charges on the aluminum layer are moved and neutralized with negative charges on the OPC layer.

The Scorotron charger is used to maintain an even surface potential on the drum at all times. It controls the surface potential regardless of the charge characteristics of the drum surface.

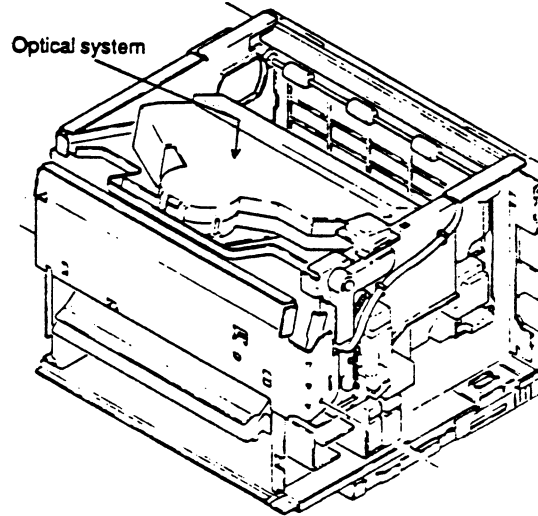
A screen grid is placed between the charger wire and the drum surface. A stable voltage is added to the grid to apply the charger current to the drum surface and the grid. As the drum surface is charged by the main charger unit, the surface potential increases. This increases the current flowing through the screen grid. When the drum surface potential nears the grid potential, the entire current turns to flow to the grid so that the drum surface potential can be maintained at a stable level.

Print pattern signal is converted into a visible image by the semiconductor laser using negative to positive (reversible) developing method. Therefore, if the developing bias is added before the drum is charged, toner is attracted onto the drum. If the developing bias is not added when the drum is charged, the carrier is attracted to the drum because of a strong electrostatic force of the drum. To avoid this, the process is controlled by adjusting the drum potential and the grid potential of the Scorotron charger.

The developing bias would be lost if the power supply was shut off during printing due to a power failure. In this event, the drum potential abate slightly and the carrier would be deposited on the drum because of strong static power. To prevent this, the printer retains the developing bias for a certain period against a possible power supply failure.

LASER/OPTICAL UNIT

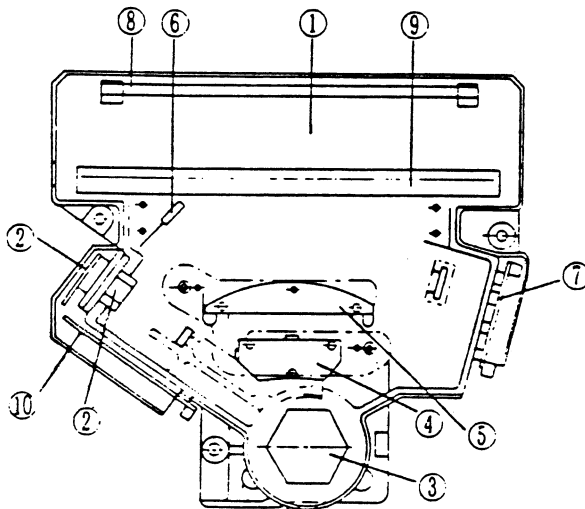
The laser/optical unit is located in the upper frame unit. When replacing the laser/optical unit, replace the whole unit. After every replacement or reassembly, be sure to perform the laser/optical unit position adjustment.



A laser beam is sent from the semiconductor laser diode in synchronization with the video signal and is focused by means of the collimator lens. It is exposed to the polygonal mirror that rotates at a given speed, and the laser beam scans in the main scan direction as the mirror rotates. The main scan laser beam enters the focus correction lens where it is collected and focused to the reflect mirror that reflects the beam on the drum. The point where "write" starts is the point where the laser beam coming out of the focus correction lens is reflected by the trigger mirror and exposes the photodiode.

CAUTION

Do not remove the laser/optical unit cover.

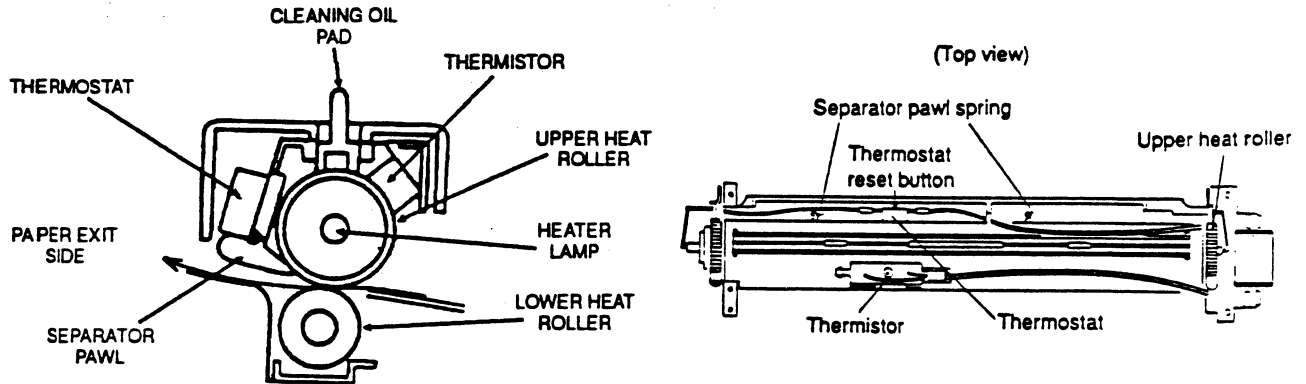


1. Plastic molding
2. Semiconductor laser diode and collimator lens
3. Polygonal mirror and scan motor
4. Focus correction lens A
5. Focus correction lens B
6. Trigger mirror
7. PIN diode and detect circuit board
8. First reflect mirror
9. Second reflect mirror
10. APC circuit board

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FUSER UNIT

A Teflon roller is used for the upper heat roller and a silicon rubber roller is used for the lower heat roller for better toner fusing and paper separation. The surface temperature of the upper heater roller is set to 175o C.

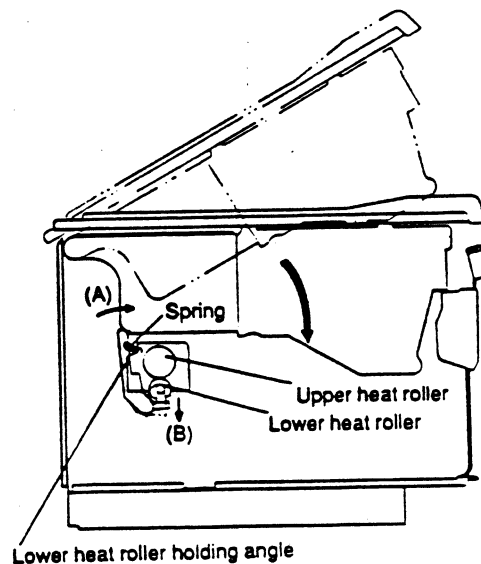


The roller cleaner is applies a small amount of silicon oil to the upper heat roller to prevent separation pawl wear, remove the lower heat roller dirt, and prevent adhesion of dirt to the upper heat roller.

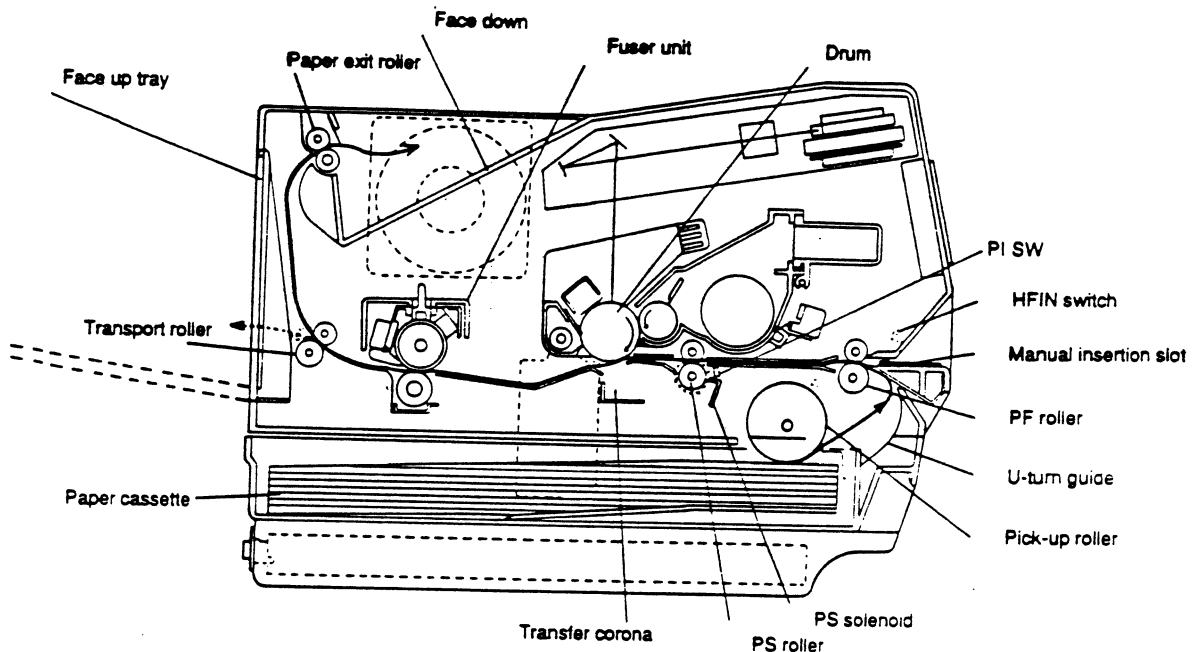
Two separator pawls are used on the upper heat roller. The separator pawl is teflon coated to reduce friction with the roller.

The heater lamp, thermistor, PCU CCA, DC Power Supply CCA, and triac within the power supply unit are used to control the temperature in the fuser unit. To prevent irregularly high temperature in the fuser unit, a thermostat is used for safety purposes.

When the upper unit is opened, the lower heat roller angle is pulled in direction (A) by the spring and the lower heat roller moves down in direction (B). In this way, when the upper unit is opened, the upper and the lower heat rollers are automatically separated to facilitate paper removal in case of a paper jam.



PAPER FEED AND TRANSPORT BLOCK



There are two paper feed systems available: the automatic paper feed and the manual paper feed. Two paper exit systems, face-up and face-down, are also available.

A paper is taken up by pick-up roller from the paper cassette and fed along the U-turn guide to the paper feed roller. The paper is then moved by the paper feed roller along the paper path to the aligning roller, where it is stopped to adjust print timing and alignment. Then aligning solenoid is pulled to allow the aligning roller to rotate and the paper is fed to the drum.

The image on the drum is transferred to the paper by the transfer charger. The paper with the transferred image on it is fed to the fuser unit, where the images are fused. The fused paper is fed to the transport roller. If the face-up exit tray is open, the paper exits in the face-up mode. If the face-up tray is closed, the paper is fed to paper exit roller and exits to the face-down exit tray in the face-down mode.

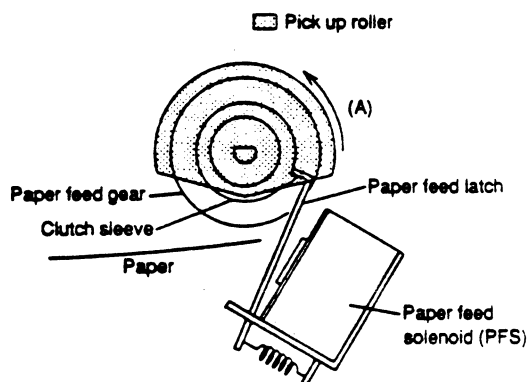
When paper is fed from the manual feed slot, the manual feed switch is turned on, and the paper is fed from the paper feed roller in the same manner as above.

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The illustrations below show the positions of the pick-up roller, the paper feed clutch sleeve, and the paper feed latch in the initial state after the READY indicator lights. The paper feed clutch is in contact with the projection of the clutch sleeve.

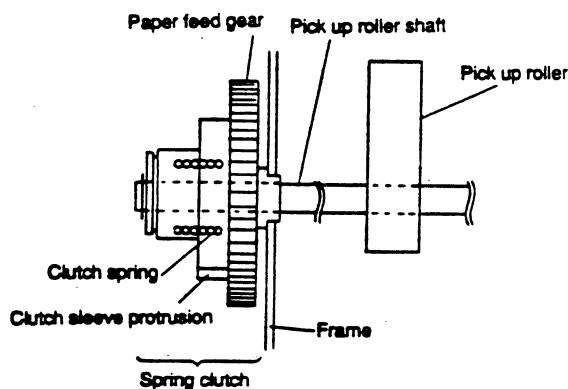
NOTE

The paper feed drive gear is a one-way clutch of the spring system. Rotation of the paper feed drive gear is transmitted only in direction (A) shown.



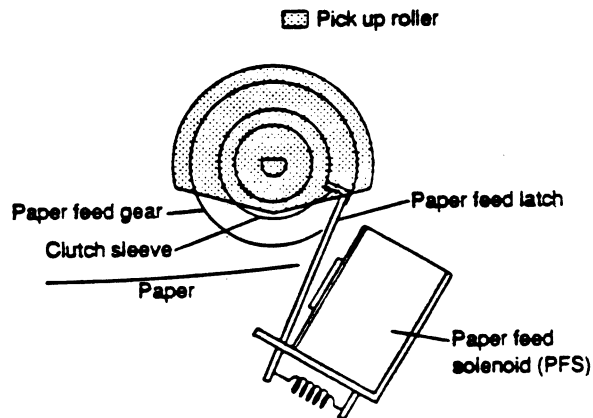
When a print command is received, the main motor starts to drive each drive gear. The paper feed gear also starts to be driven, but the rotation of the gear is not conveyed to the paper feed roller shaft and therefore the paper feed roller does not rotate because the paper feed latch is holding the clutch sleeve protrusion.

In about one second after the start of the main motor, the paper feed solenoid actuates momentarily so that the paper feed latch disengages from the clutch sleeve protrusion. Then, the rotation of the paper feed gear is conveyed to the paper feed roller shaft so that the pick-up roller starts rotating to feed the paper.

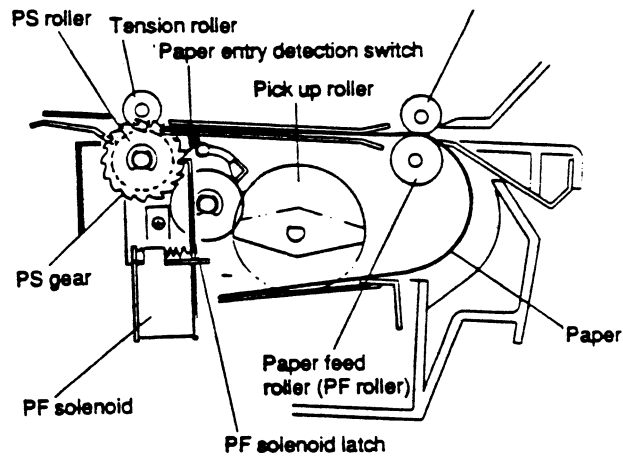


INTRODUCTION

As the pick-up roller makes a full turn, the clutch sleeve protrusion is caught by the paper feed latch so that the paper feed roller stops rotating.

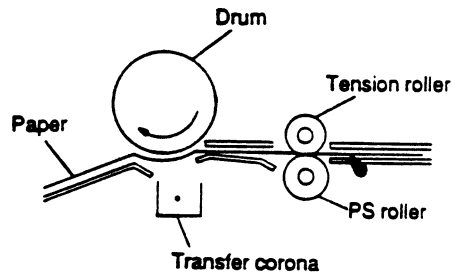


As the paper is fed further into the printer, it is transported to the aligning roller through the paper feed roller and the paper entry sensor. Since the aligning roller solenoid latch is engaged with the aligning gear, the aligning roller does not rotate and the paper is stopped at the aligning roller to make synchronization with the leading edge of images on the drum. Since the paper feed roller is continuing to rotate, the paper leading edge is evenly pressed against the aligning roller to correct any paper skew.



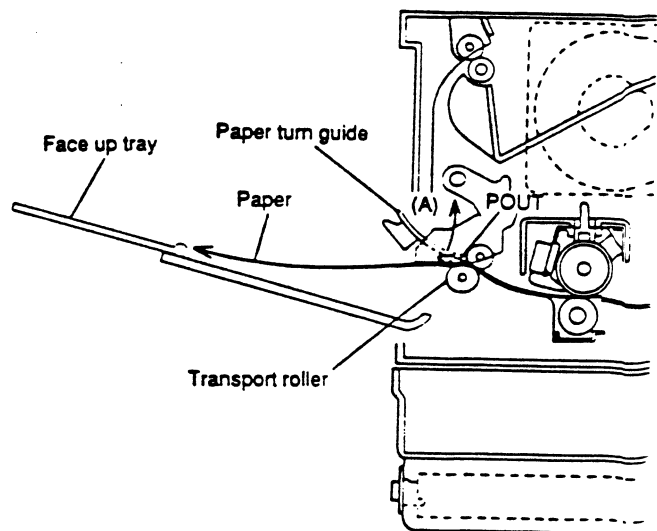
INTRODUCTION

Then the aligning roller solenoid is turned on to rotate the aligning roller. The paper is transported to the transfer charger, where images are transferred on the paper. The paper is electrostatically separated from the drum and transported through the fusing unit, the upper and lower heat rollers, and the paper exit switch.



After passing through the paper exit switch, the paper is fed to the face-up exit tray when the face-up exit tray is open. This happens because the U-turn guide is open and is separated from the transport roller.

In face-down mode, the face-up exit tray is closed and the U-turn guide is in contact with the transport roller. Therefore the paper is transported along the U-turn guide and fed to the face-down exit tray by the paper exit roller.



BASIC SPECIFICATIONS

Item	Description
Type	Desktop
Print process	Diode laser, dry electrophotographic method
Resolution	300 dpi (dots-per-inch)
Paper feed system	250-sheet (20 lbs.) cassette and manual feeds, cassette stored under the machine.
Paper size	AB series--A4, B5 Inch series--Letter, executive, invoice, legal
Print speed	6 sheets/minute (3000 character/page, simple text, letter size)
Warm up time	60 seconds, maximum, at the rated voltage, room temperature of 20° C and 65% RH.
First print	20 seconds maximum (after in activity) for first print at 25° C
Multipage printing	User controlled or control panel controlled.
Paper delivery	Face-down tray = 250 sheets (20 lbs.) Face-up tray = 30 sheets (20 lbs.)
Developing system	Dry, two-component, magnetic brush type
Cleaning method	By means of the cleaning blade embedded in the drum cartridge
Fusing method	Heat roller type Upper fuser roller (teflon coated) Lower fuser roller (silicon rubber)
Interface	Centronics parallel interface RS232C serial interface
Power requirements	120/220/240VAC, 50/60Hz, detachable AC power cord
Power consumption	650W maximum
Operational noise	50dBA, maximum during operation, except for impact noise 45dBA, maximum, during standby
Physical dimensions	13-25/64"W x 14-3/16"D x 10-33/64"H 340mm(W) x 360mm(D) x 267mm(H)

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Item	Description
Weight	15 kg (33.1 lb.)
Accessories	Drum cartridge Developer cartridge (developer included) Toner cartridge (toner included) Used-toner collector Letter or A4 size cassette Roller cleaner Charager wire cleaner AC power cord
Supplies	Drum cartridge Developer cartridge Toner kit (Toner cartridge, used-toner collector, and roller cleaner)
Options	Expansion memory, 0.5MB, 1.5MB, 2.5MB, 4.0MB Font card Cassettes--Legal, A4, B5, Letter, Executive, Invoice Second cassette unit Envelope feeder
Emulations	HPLJ Series II Epson FX-80 IBM ProPrinter IBM Graphics Printer Diablo 630/630 ECS

OPERATOR CONTROL PANEL

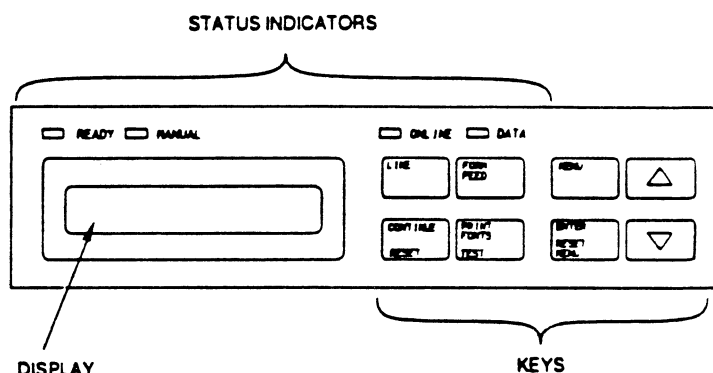
SECTION 2. CONTROL PANEL FUNCTIONS

This section has two purposes. It tells you about the control panel keys, LED indicators and display messages for normal printing operation. It also describes in detail the menu structures that are used to set the printer's operating configuration. The control panel keys are used to enter, select and set items within the menu structures.

OPERATOR CONTROL PANEL DESCRIPTION

The operator control panel is used to set the printer off-line for direct operations such as setting the menu items and executing self-tests. When using the control panel, you must:

- set the printer off-line before using the keys.
- check the functions shown on the display. Some keys have several functions that are selected by the duration of time the key is pressed.



Operator Control Panel Status Indicators

READY (green)	Remains lit when the printer is on and ready to print. Blinks while receiving data, is off during warm-up, and turns off when an error occurs.
MANUAL (orange)	Lights when the manual feed mode is selected.
ON LINE (green)	Lights when the printer is set on-line and ready to receive data from the computer. If the LINE key is pressed during printing to set the printer off-line, this light blinks until the page being printed is fed out to indicate that the printer cannot be set to off-line.
DATA (orange)	Lights when the print buffer contains data to print. Blinks if a partial page remains in the printer buffer and the printer has waited more than five seconds for a Form Feed command.

OPERATOR CONTROL PANEL

Operator Control Panel Keys

NOTE

Set the printer off-line before using the control panel keys. Some keys have several functions that are selected by the duration of time that the key is pressed. Check the display while selecting functions.

LINE	Press to alternately set the printer on-line and off-line. Also used to set the printer on-line after performing self tests or setting menu items. The printer can receive data from the computer when on-line (ON LINE light on) and cannot receive data when off-line (ON LINE light off).
CONTINUE/RESET	Used to select the following two functions:
CONTINUE	Clears most errors and used for the following operations: ● To set the printer on-line from the off-line state after an error. ● To cancel printer self-tests and font list printout and set the printer on-line. ● To set the printer on-line from the menu setting mode. ● To continue printing with the current paper source even when the printer requests a different paper or envelope size.
RESET	Resets the printer to the Control Panel Default Settings (the menu settings selected by the user). Includes the following operations: ● Clears temporary soft fonts and temporary macros in HP LaserJet Series II emulation. ● Clears stored page data.
FORM FEED	Prints data in the print buffer when the printer is off-line. This key does not function when the printer is on-line.
PRINT FONTS/TEST	Used to select the following three functions:
PRINT FONTS	Prints out list of available fonts.
SELF TEST #1	Prints the settings of the menu items.
SELF TEST #2	Prints one page of test pattern.
MENU	Used to select one of the following menus and scroll through the items in them:
PRINTING MENU	Press briefly to enter the Printing Menu.
CONFIGURATION MENU	Press and hold to enter the Configuration Menu.

OPERATOR CONTROL PANEL

ENTER/RESET MENU

Used as follows:

ENTER

Press briefly to save a menu value as Control Panel Default Setting.

RESET MENU

Press and hold to initialize all items in the Printing Menu to the factory default settings. Also

- Clears temporary soft fonts and temporary macros in HP LaserJet Series II emulation.
- Clears stored page data.

▲ and ▼

Used to scroll through menu item values. Each time a key is pressed the menu values change.

Operator Control Panel Display

The 16-character liquid crystal display (LCD) indicates the following:

- Status messages
- Menu settings or selections
- Error conditions
- Service messages

See Section 6, *Troubleshooting* for error condition and service messages.

OPERATOR CONTROL PANEL

CONTROL PANEL STATUS MESSAGES

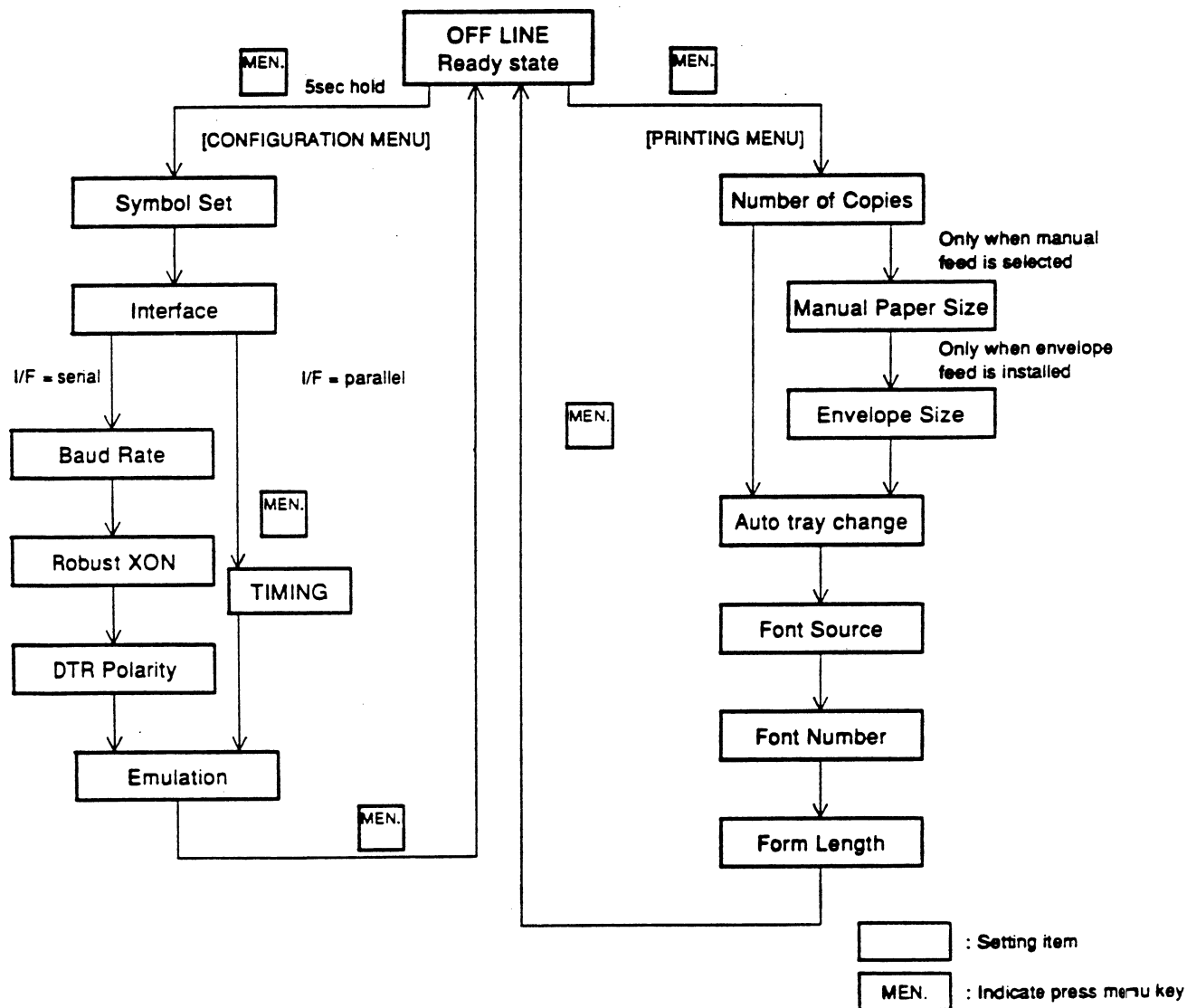
Message	Function	Variables
WARMING UP	Indicates the printer is warming up.	
READY [XXX] **	Indicates the on line and ready condition, emulation, and form source. [XXX] indicates emulation. ** indicates form source.	[LJ2]=HP LaserJet Series II [FX]=Epson FX-80 [PP]=IBM ProPrinter [GP]=IBM Graphics Printer [D6]=Diablo 630/630 ECS [HEX]=Hex Dump T1=Tray 1 T2=Tray 2 MF=Manual Feed EV=Envelope Feeder
TRAY 1 = **	Indicates the paper size of selected tray.	LETTER LEGAL EXECUT INVOICE A4 B5
TRAY 2 = **	** = paper size	
ENVELOPE = ***	Indicates selected envelope size. *** = envelope size	COM-10 MONARC DL C5
MANUAL FEED	Indicates manual feed selected as paper source.	
FONT PRINTOUT	Current font printout.	
SELF TEST #1	Current configuration printout	
SELF TEST #2	Test pattern printout	
RESET	Printer reset	If the CONTINUE/RESET key is held down for more than 3 seconds.
MENU RESET	Function menu reset	If the ENTER/RESET MENU key is held down for more than 3 seconds.
CHG. TRAY 1 = ***	Prompts to change cassette 1 to a different paper-size.	
CHG. TRAY 2 = ***	Prompts to change cassette 2 to a different paper-size.	
FEED = ****	Prompts to manually feed a paper or envelope size.	

OPERATOR CONTROL PANEL

MENU STRUCTURE

The menu structure consists of the printing and configuration menus. The printing menu is selected by pressing and holding the MENU key for less than five seconds. The configuration menu is entered by pressing and holding the menu key for more than five seconds. Selectable functions may vary according to the emulation mode chosen. See the User's Manual for the menu setting instructions.

HP LASERJET SERIES II MENU STRUCTURE



OPERATOR CONTROL PANEL

HP LaserJet Series II Menu Selections

Menu Settings Display	Selectable Value
-----------------------	------------------

Printing Menu

COPIES = 01	01, 02 . . . 99
MANUAL = LETTER	LETTER, LEGAL, EXECUT, INVOIC, A4, B5
ENVELOPE = COM-10	COM-10, MONARC, DL, C5
AUTO TRAY CHG = Y	Y/N
ORIENTATION = P	P (Portrait) or L (Landscape)
FONT NUMBER = 00	00 . . . 50

Configuration Menu (5 second hold)

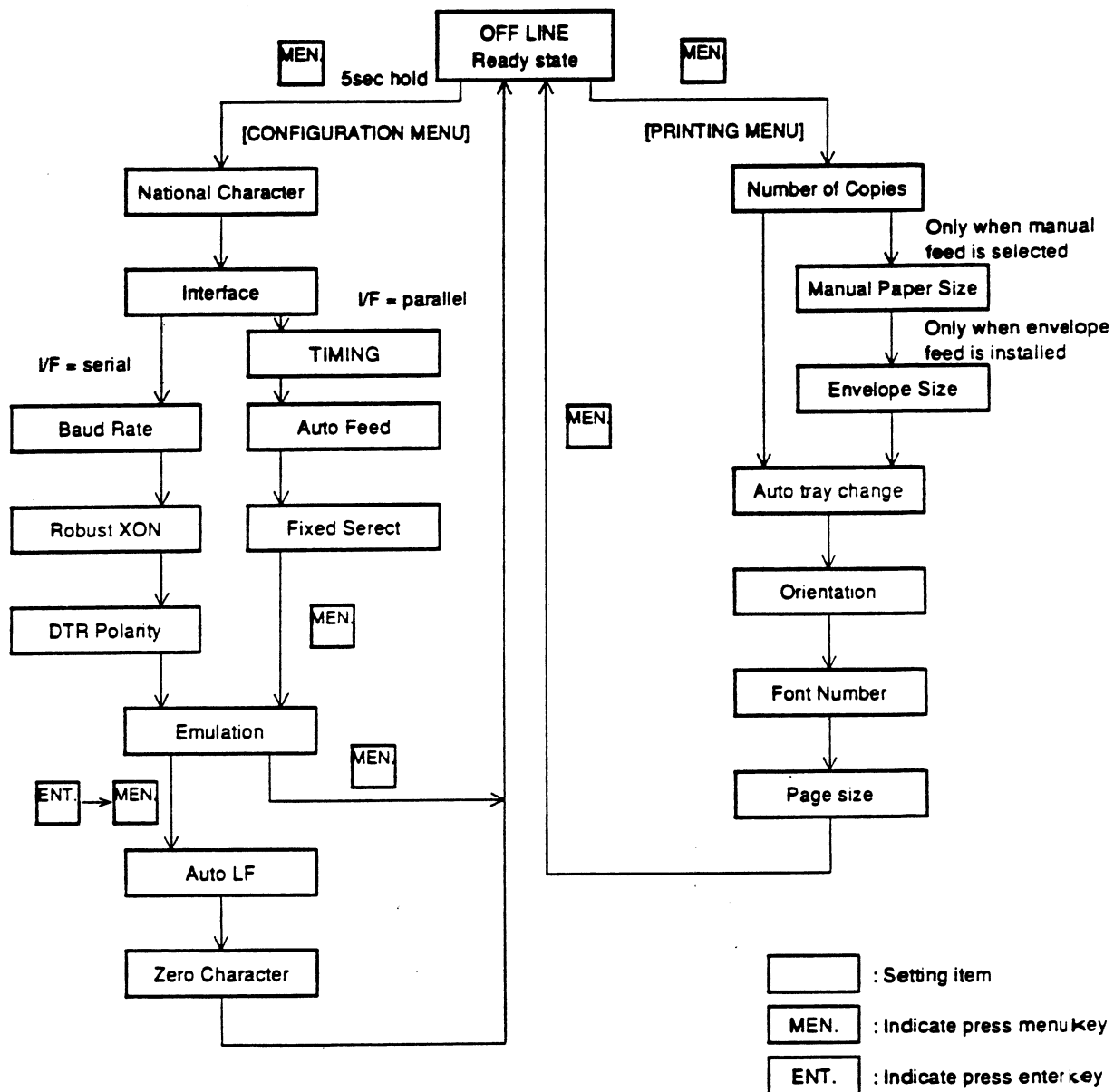
SYMBOL SET	See Table below.
I/F = SERIAL	SERIAL, PARALLEL
BAUD RATE = 9600	300, 600, 1200, 2400, 4800, 9600, 19200
ROBUST XON = ON	ON, OFF
DTR POLARITY = HI	HI (High), LO (Low)
EMULATION = HPLJ2	HPLJ2, FX80, IBMPP, IBMGP, D630, HEX

HP LaserJet Series II Symbol Set Selection Examples (5 sec hold)

Symbol Set #	Display	Symbol Set
8U	Roman-8	
11U	IBM-DN	PC-8 Denmark/Norway
2U	ISO2	ISO IRV
0U	ISO6	ANSI ASCII (USASCII)
3S	ISO10	ISO Swedish
0S	ISO11	ISO Swedish: names
0K	ISO14	JIS ASCII
0I	ISO15	ISO Italian
4S	ISO16	ISO Portuguese
2S	ISO17	ISO Spanish
1G	ISO21	ISO German
10U	IBM-US	PC-8
0N	ECMA-94	ISO 100 Latin 1
0F	ISO25	ISO French
2K	ISO57	ISO Chinese
0D	ISO60	ISO Norwegian v1
1D	ISO61	ISO Norwegian v2
1F	ISO69	ISO French
5S	ISO84	ISO Portuguese: IBM
6S	ISO85	ISO Spanish: IBM
0G	German	HP German
1S	Spanish	HP Spanish

OPERATOR CONTROL PANEL

EPSON FX-80 MENU STRUCTURE



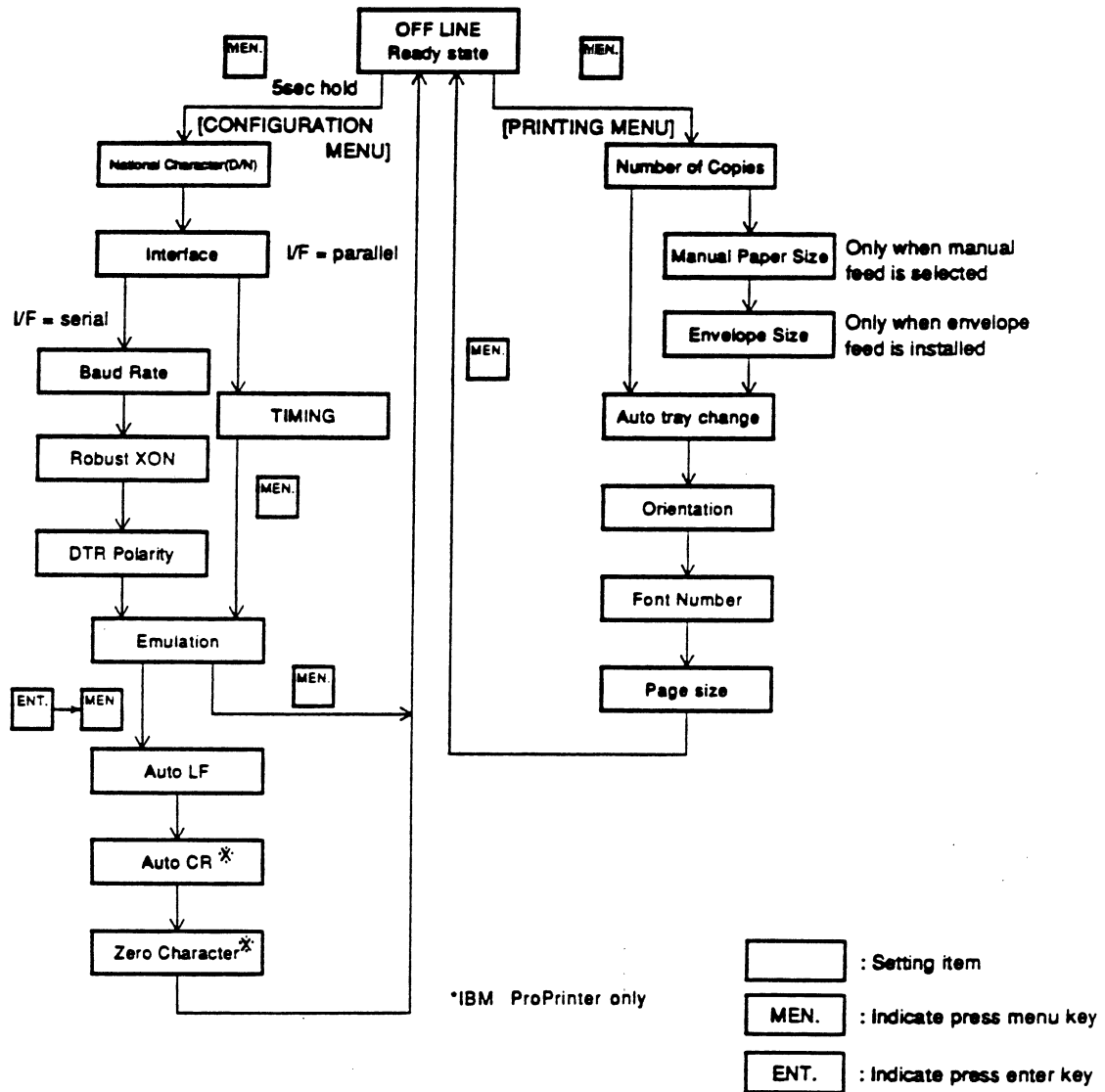
OPERATOR CONTROL PANEL

Epson FX-80 Menu Selections

Menu Settings Display	Selectable Value
Configuration Menu (5 second hold)	
NATIONAL = U.S.A.	U.S.A., FRANCE, GERMAN, ENGLAND, DNMRK1 SWEDEN, ITALY, SPAIN JAPAN, NORWAY, DNMRK2
I/F = SERIAL	SERIAL, PARALLEL
BAUD RATE = 9600	300, 600, 1200, 2400, 4800, 9600, 19200
ROBUST XON = ON	ON, OFF
DTR POLARITY = HI	HI (High), LO (Low)
TIMING = 1	1, 2
AUTO FEED = OFF	OFF, ON
FIX SELECT = ON	OFF, ON
EMULATION = FX80	HPLJ2, FX80, IBMPP, IBMGP, D630, HEX
AUTO LF = OFF	OFF (CR = CR)RON (CR = CR + LF)
ZERO = "0"	"0", "ø"
Printing Menu	
COPIES = 01	01, 02 . . . 99
MANUAL = LETTER	LETTER, LEGAL, EXECUT, INVOIC, A4, B5
ENVELOPE = COM-10	COM-10, MONARC, DL, C5
AUTO TRAY CHG = Y	Y/N
ORIENTATION = P	P (Portrait)RL (Landscape)
FONT NUMBER = 00	00 . . . 50
PG SIZE = NORMAL	NORMAL/EXTEND

OPERATOR CONTROL PANEL

IBM PROPRINTER/GRAPHICS PRINTER MENU STRUCTURE

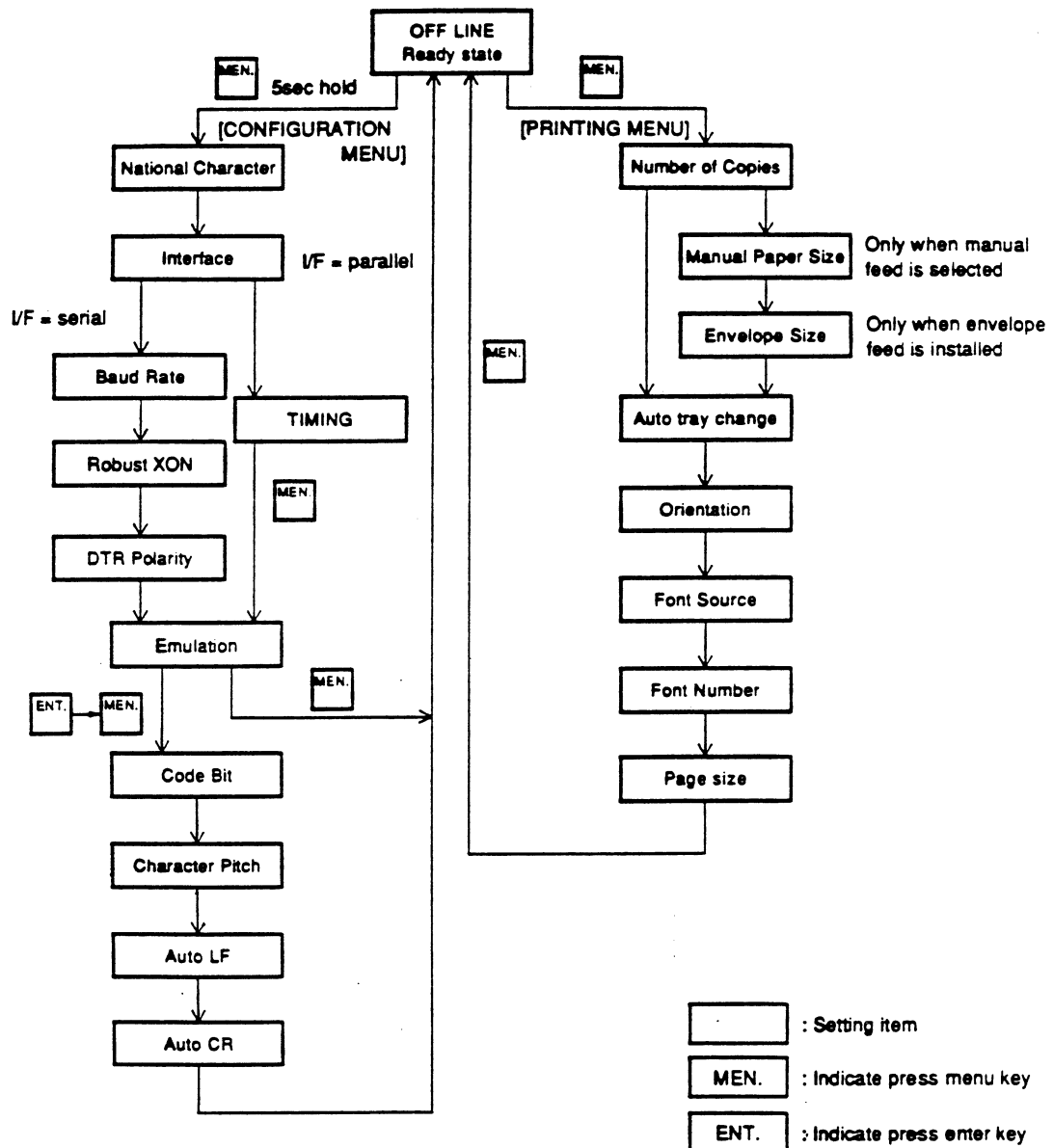


IBM ProPrinter/Graphics Printer Menu Selections

Printer Display	Selectable Value
Configuration Menu (5 second hold)	
NATIONAL = GLOBAL	GLOBAL (International) N (Norway) D (Denmark)
I/F = SERIAL	SERIAL, PARALLEL
BAUD RATE = 9600	300, 600, 1200, 2400, 4800, 9600, 19200
ROBUST XON = ON	ON, OFF
DTR POLARITY = HI	HI (High), LO (Low)
TIMING = 1	1, 2
EMULATION = IBMPP	HPLJ2, FX80, IBMPP, IBMGP, D630, HEX
AUTO LF = OFF	OFF (CR = CR) ON (CR = CR + LF)
AUTO CR = OFF	OFF (LF = LF) ON (LF = LF + CR)
ZERO = "0"	"0", "Ø"
Printing Menu	
COPIES = 01	01, 02 . . . 99
MANUAL = LETTER	LETTER, LEGAL, EXECUT, INVOIC, A4, B5
ENVELOPE = COM-10	COM-10, MONARC, DL, C5
AUTO TRAY CHG = Y	Y/N
ORIENTATION = P	P (Portrait)RL (Landscape)
FONT NUMBER = 00	00 . . . 50
PG SIZE = NORMAL	NORMAL/EXTEND

OPERATOR CONTROL PANEL

DIABLO 630/630ECS MENU STRUCTURE



OPERATOR CONTROL PANEL

Diablo 630/ECS Menu Selections

Printer Display	Selectable Value
Configuration Menu (5 second hold)	
NATIONAL = U.S.A.	U.S.A., FRANCE, GERMAN, ENGLAND, DNMRK1, SWEDEN, ITALY, SPAIN, JAPAN, NORWAY, DNMRK2
I/F SERIAL	SERIAL, PARALLEL
BAUD RATE = 9600	300, 600, 1200, 2400, 4800, 9600, 19200
ROBUST XON = ON	ON, OFF
TIMING = 1	1, 2
DTR POLARITY = HI	HI (High), LO (Low)
EMULATION = D630	HPLJ2, FX80, IBMPP, IBMGP, D630, HEX
CODE BIT = 7	7, 8 (bits)
CHR.PITCH = 10	10 (cpi), 12 (cpi), 15 (cpi), PS (pitch)
AUTO LF = OFF	OFF, ON
AUTO CR = OFF	OFF, ON
Printing Menu	
COPIES = 01	01, 02 . . . 99
MANUAL = LETTER	LETTER, LEGAL, EXECUT, INVOIC, A4, B5
ENVELOPE = COM-10	COM-10, MONAC, DL, C5
AUTO TRAY CHG = Y	Y/N
ORIENTATION = P	P (Portrait), L (Landscape)
FONT SOURCE = I	I (Internal font), A (font card), B (font card), S (Soft font)
FONT NUMBER = 00	00 . . . 50
PG SIZE = NORMAL	NORMAL/EXTEND

SECTION 3. MAINTENANCE

This section tells how to take care of the printer. Most of the information is repeated in the User's Manual and is included here for convenience. It includes procedures for:

- replacing the toner, developer and drum cartridges,
- cleaning the printer.

CARTRIDGE AND CONSUMABLE REPLACEMENT

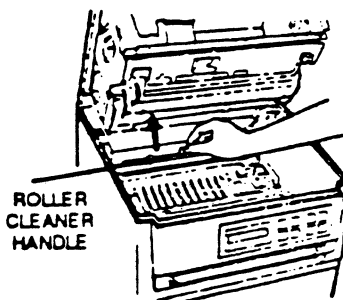
The procedures in this section tell you what to do when the control panel display indicates a replacement is needed. See Section 6, *Troubleshooting* for what to do if the display indicates a replacement is needed when it shouldn't.

Replace Toner Kit

When the display shows RPL TONER KIT, the toner cartridge should be replaced. At the same time, the used-toner collector and the roller cleaner must also be replaced.

The toner cartridge replacement kit includes a toner cartridge, used-toner collector, and roller cleaner.

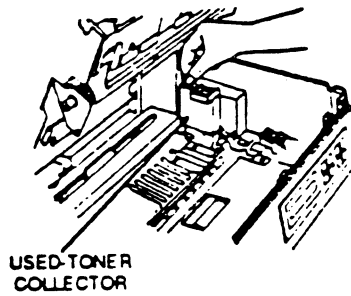
1. Press the upper unit release button to open the printer.
2. Remove the used roller cleaner from the top of the fuser unit.
CAUTION! The fuser unit is hot.



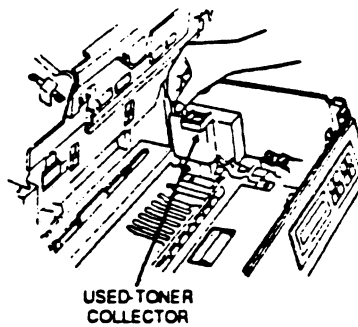
3. Remove the new roller cleaner from its plastic bag and insert it into the slot on top of the fuser unit.

MAINTENANCE

4. Remove the full used-toner collector and place it in a plastic bag. Seal the bag before disposing of it.

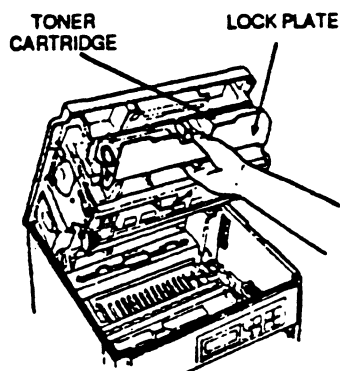


5. Place the new used-toner collector into position in the printer base.
6. Firmly press down on the top edge of the collector until it clicks in place.

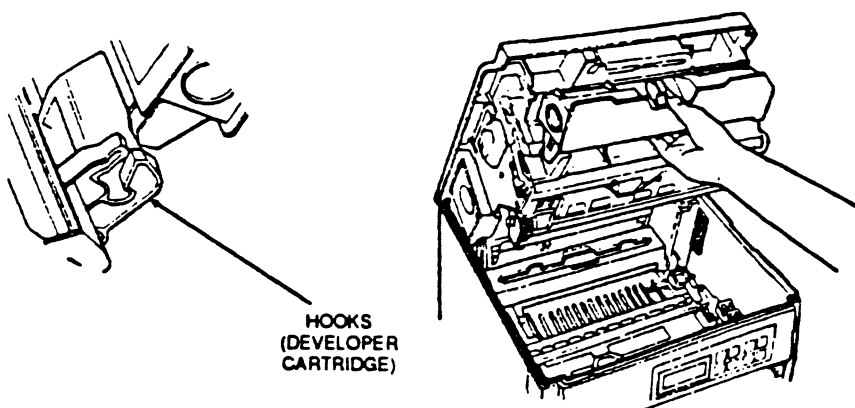


MAINTENANCE

7. Lift up the green lock plate on the top side of the toner cartridge and rotate and pull out to detach it from the developer cartridge.

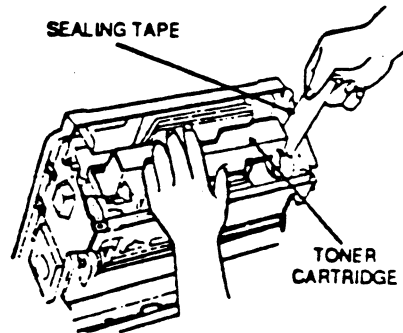


8. Shake the new toner cartridge horizontally four or five times to loosen the toner.
9. Align the toner cartridge slots with the developer cartridge hooks and rotate until it clicks and is securely attached.



MAINTENANCE

10. Hold the toner cartridge in place and pull out the sealing tape from the toner cartridge to release toner into the developer cartridge.
11. Tap on the toner cartridge four or five times.



10. Close the printer.

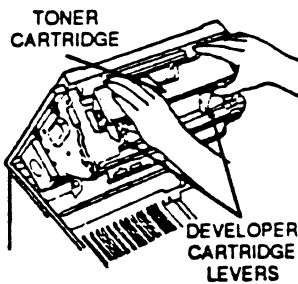
Replace Developer Cartridge

When the display shows RPL DEVELOPER and the message cannot be overridden by pressing the CONTINUE/RESET key, the developer cartridge must be replaced. If the toner cartridge was recently replaced, you can override the RPL DEVELOPER message by pressing the CONTINUE/RESET key. When the toner is completely used up, the developer cartridge must be replaced.

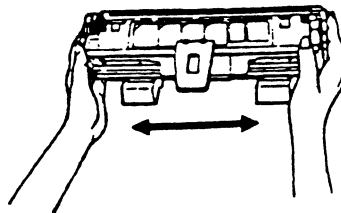
NOTE

The toner cartridge, used-toner collector, and roller cleaner must also be replaced at the same time.

1. Press the upper unit release button to open the printer.
2. Press the green levers on the developer cartridge with both hands and pull out the toner and developer cartridges together.



3. Remove the new developer cartridge from the plastic bag. Place the old developer cartridge into the plastic bag, and seal and dispose of it properly.
4. Shake the new developer cartridge vigorously from side-to-side four or five times.

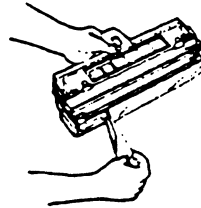


MAINTENANCE

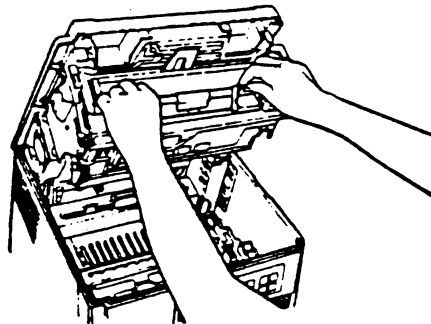
5. Place the developer cartridge on a level surface, hold it in place, and remove the covering material. Be careful not to touch the developer roller.

CAUTION

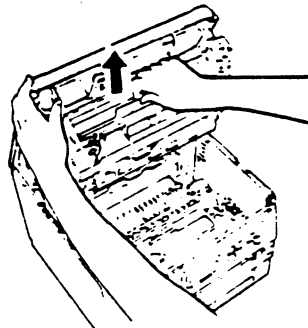
Do not remove the sealing plate from the other side of the developer cartridge.



6. Press the green levers on the developer cartridge with both hands and slide it into the printer along the guides.



7. Remove the tape securing the sealing plate and pull out the sealing plate.

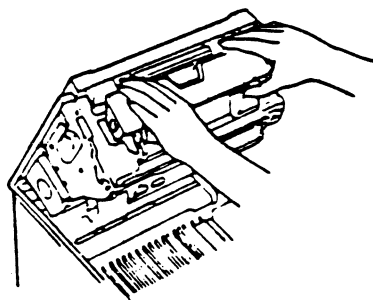


8. Install the new toner kit. See *Replace Toner Kit*.

Replace Drum Cartridge

When the display shows RPL PHOTO DRUM, the drum cartridge and ozone filter should be replaced. If a replacement drum is not readily available or you are in the middle of a printing job, you can continue to print up to 5000 more copies by pressing the CONTINUE/RESET key when the message appears.

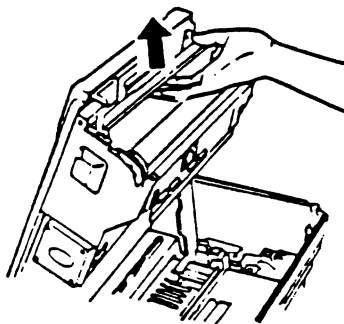
1. Press the upper unit release button to open the printer.
2. Press the green levers on the developer cartridge with both hands and pull out the toner and developer cartridges together.



3. Holding the frame of the drum cartridge pull it out along the guides.

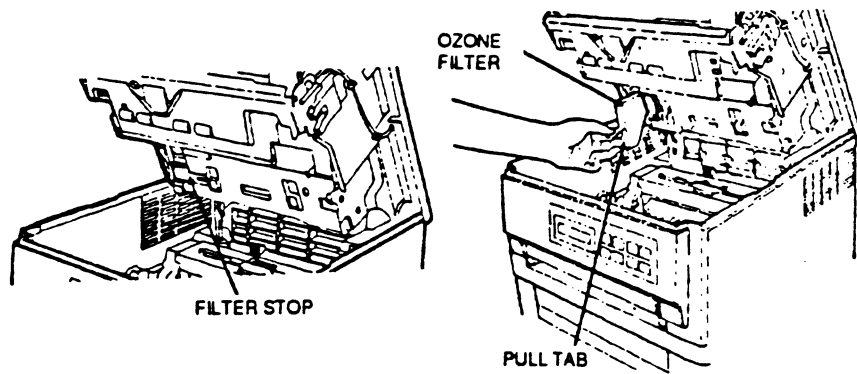
CAUTION

Do not touch the drum. Scratches or smudges on the drum will cause dirty printouts.

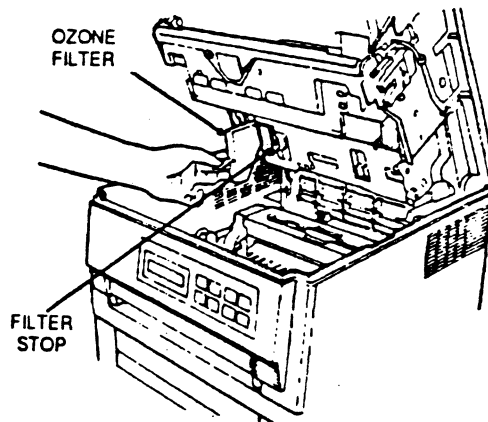


MAINTENANCE

4. Turn the green ozone filter stopper clockwise and pull the tab of the ozone filter outward to remove it.



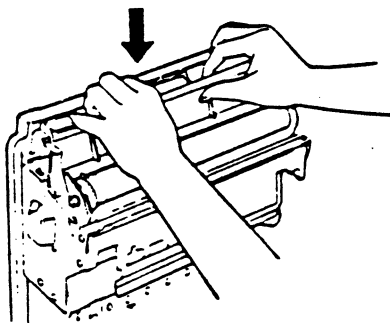
5. Remove the new ozone filter from the packaging and insert it into the printer. Turn the green stopper to lock it in place.



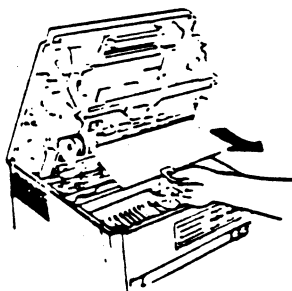
CAUTION

Do not touch the drum surface. Print quality could be damaged.

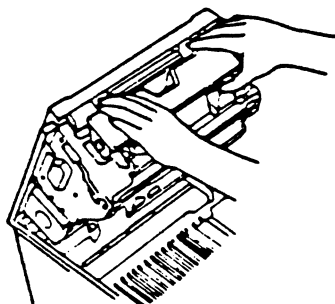
6. Remove the new drum cartridge from the plastic bag. With the drum facing down, insert the drum cartridge, sliding it along the guides.



7. Hold the drum cartridge and pull the green tab to remove the protective sheet.



8. Reinstall the developer and toner cartridges.



9. Close the printer.

MAINTENANCE

CLEANING

Cleaning the Cabinet

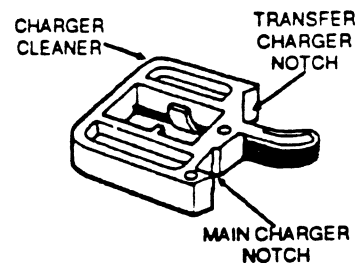
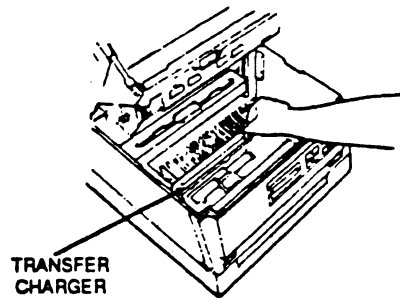
When the printer cabinet becomes dirty or stained, wipe with a soft, clean cloth. If necessary, dampen the cloth with water. Do not use thinner, benzene, or similar volatile cleaning agents.

Cleaning the Charger Wires

If the printouts are blotchy or streaky, dirty charger wires may be the cause.

Transfer Charger Cleaning

1. Turn off the power.
2. Press the upper unit release button to open the printer.
3. Slide the charger wire cleaner (it was shipped in the carton with the printer) with the notch for the transfer charger resting on the case along the wire as shown.



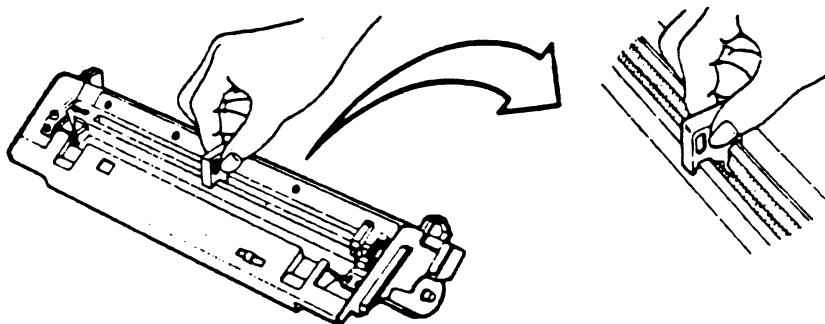
Main Charger Cleaning

1. Carefully remove the toner and developer cartridges.
2. Remove the drum cartridge and place it in a dark place or black plastic bag.

CAUTION

Do not touch the drum. Scratches or smudges on the drum will cause dirty printouts.

3. Slide the charger wire cleaner with the notch for the main charger resting on the case as shown.



4. Reinstall the drum, toner, and developer cartridges.
5. Close the printer.

SECTION 4. REMOVAL AND INSTALLATION PROCEDURES

This section describes the removal and installation procedures for the assemblies and parts that may require replacement or repair.

NOTE

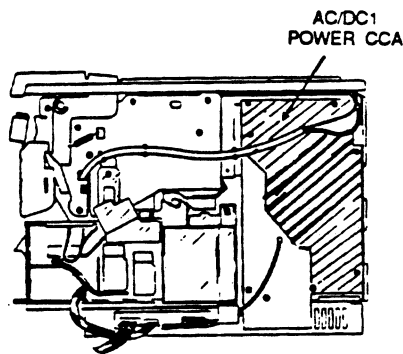
*The laser/optical unit must be replaced as a unit.
Piece parts cannot be replaced.*

TOOLS REQUIRED

- # 2 Phillips screwdrivers, long and short handled
- pliers, needle-nosed
- Wire cutters or scissors

CAUTION

*Do not touch the AC/DC1 Power CCA with the
printer's power cord plugged into an electrical outlet.
It may cause an electrical shock.*



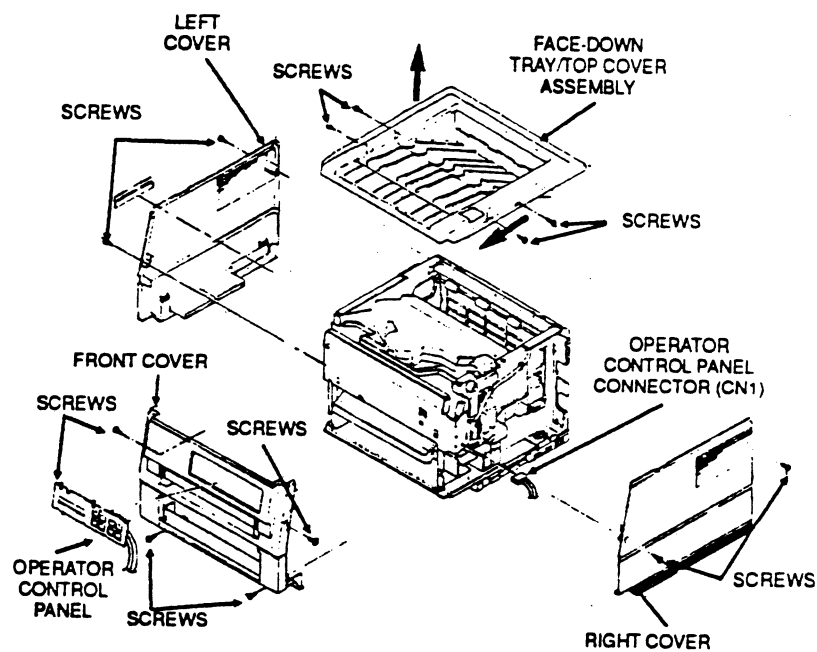
REMOVAL/INSTALLATION

COVER REMOVAL/INSTALLATION

Most of the procedures in this section require the removal of one or more of the printer's exterior covers (commonly called the skin set). To remove the exterior covers from the printer:

Removal

1. Turn off the printer.
2. Press the upper unit release button to raise the upper unit.
3. Remove the paper cassette and the used-toner collector.



REMOVAL/INSTALLATION

4. Remove the two screws securing the left cover.
5. Move the left cover up and outward to clear the top cover/face-down exit tray assembly and remove the left cover.
6. Remove the two screws securing the right cover.
7. Move the right cover up and outward to clear the top cover/face-down exit tray assembly and remove the right cover.
8. Disconnect the operator control panel cable connector (CN1) from the PCU CCA connector (CN14).
9. Remove the two screws securing the bottom edge of the front cover.
10. Remove the two screws from each side of the front cover.
11. Remove the front cover by pulling it straight out from the printer frame.
12. Remove the four screws (two on each side) from the top cover/face-down exit tray assembly.
13. Move the top cover/face-down exit tray forward in the direction of arrow 1, then lift up in the direction of arrow 2 to remove it.

Installation

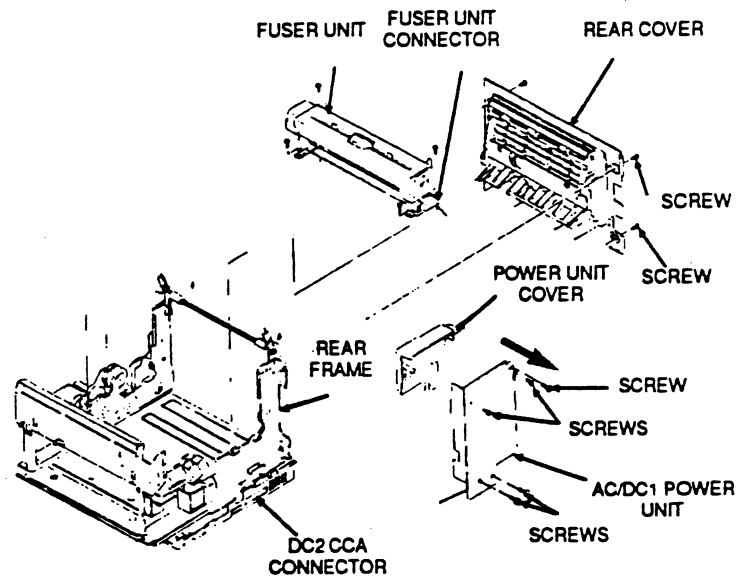
1. Move the top cover/face-down exit tray assembly into position and lower it in to the top of the printer frame.
2. Install the four screws (two on each side) that secure the top cover/face-down exit tray assembly to the printer's frame.
3. Place the front cover in position and install the two screws on each side of the front cover.
4. Install the two screws that secure the bottom edge of the front cover.
5. Connect the operator control panel cable to CN14 on the PCU CCA.
6. Hold the right cover at an angle and position it on the right frame. Secure the cover with two screws.
7. Hold the left cover at an angle and position it on the left frame. Secure the cover with two screws.
8. Install the used-toner collector and the paper cassette.
9. Lower and latch the upper unit.

REMOVAL/INSTALLATION

AC/DC1 POWER UNIT REMOVAL/INSTALLATION

Removal

1. Turn off the printer and disconnect the power cord from the electrical outlet.
2. Raise the upper unit.
3. Remove the right cover.
4. Remove the two screws that attach the AC/DC1 power unit to the rear cover and frame.
5. Remove the three screws that attach the AC/DC1 power unit to the side frame.
6. Pull the AC/DC1 power unit straight out from the printer to disconnect the AC/DC1 Power CCA connectors (CN4 and CN1) from the fuser unit connector and DC2 CCA connector.
7. If needed, remove the two screws that attach the cover to the AC/DC1 power unit.



REMOVAL/INSTALLATION

Installation

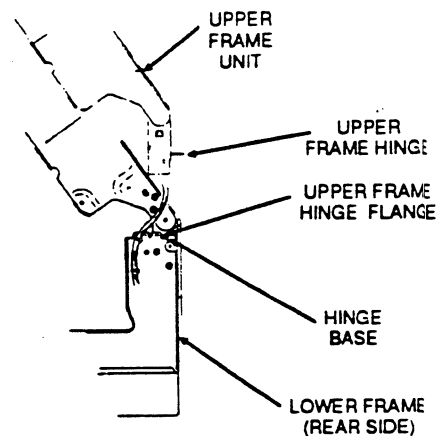
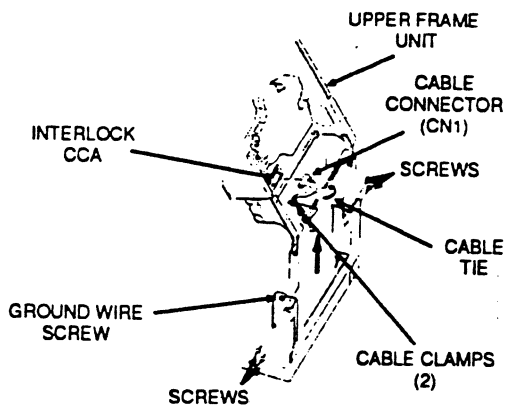
1. If needed, attach the cover to the AC/DC1 power unit with two screws.
2. Hold the AC/DC1 power unit upright and insert the CCA connectors CN1 and CN4 into the mating connectors on the DC2 CCA and the fuser unit.
3. Attach the AC/DC1 unit to the side frame with three screws.
4. Attach the AC/DC power unit to the rear cover and frame with two screws.
5. Install the right cover.
6. Close the upper unit.
7. Plug the AC power cord into an electrical outlet and resume normal operations.

REMOVAL/INSTALLATION

UPPER FRAME UNIT REMOVAL/INSTALLATION

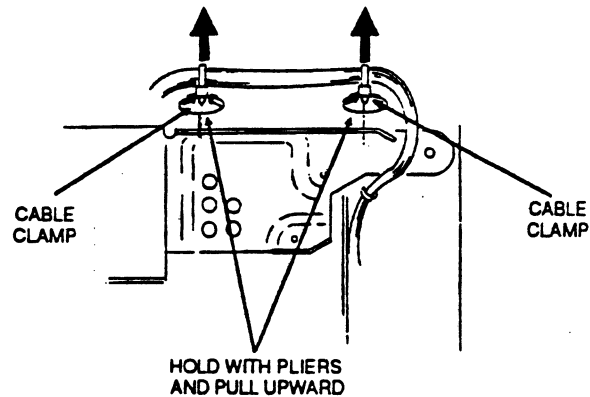
Removal

1. Turn off the printer and disconnect the power cord from the electrical outlet.
2. Raise the upper unit.
3. Remove the left and right covers.
4. Remove the top cover/face-down exit tray assembly.
5. Remove the AC/DC1 power unit.
6. Remove the cable connector (CN1) from the Interlock CCA. This cable is connected to the PCU CCA (CN29) in the lower frame. Cut the cable tie if needed.
7. Remove the two cable clamps by holding the lower knobs with pliers and pulling the clamp upward.
8. Remove the four screws from the lower unit frame and pull the upper frame upward in direction of the arrow.



Installation

1. Insert the upper frame into the lower frame so that the upper frame angle and the lower frame rear side are in parallel as shown in the illustration.



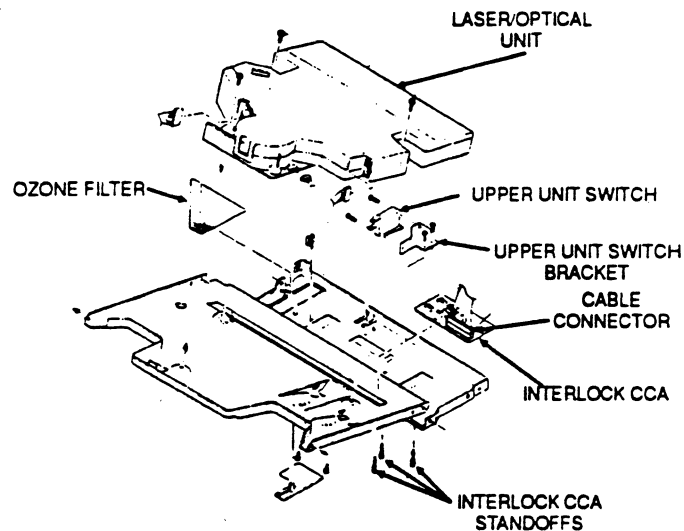
2. Adjust the flange of the upper frame angle so that it is engaged with the hinge base the lower frame
3. Insert the two cable clamps into the holes in the frame and press down firmly to seat them.
4. Connect the cable from the PCU CCA to the Interlock CCA connector CN29. If needed, secure the cable with a cable tie.
5. Install the AC/DC1 power unit.
6. Install the top cover/face-down exit tray assembly.
7. Install the right and left covers.
8. Lower and latch the upper unit.
9. Turn on the printer to continue normal operations.

REMOVAL/INSTALLATION

LASER/OPTICAL UNIT REMOVAL/INSTALLATION

Removal

1. Turn off the printer.
2. Raise the upper unit.
3. Remove the left and right covers.
4. Remove the top cover/face-down exit tray assembly.
5. Remove the laser/optical unit cable connector (CN1) from the Interlock CCA connector CN36.
6. Remove three screws and lift the laser/optical unit from the upper frame unit.



Installation

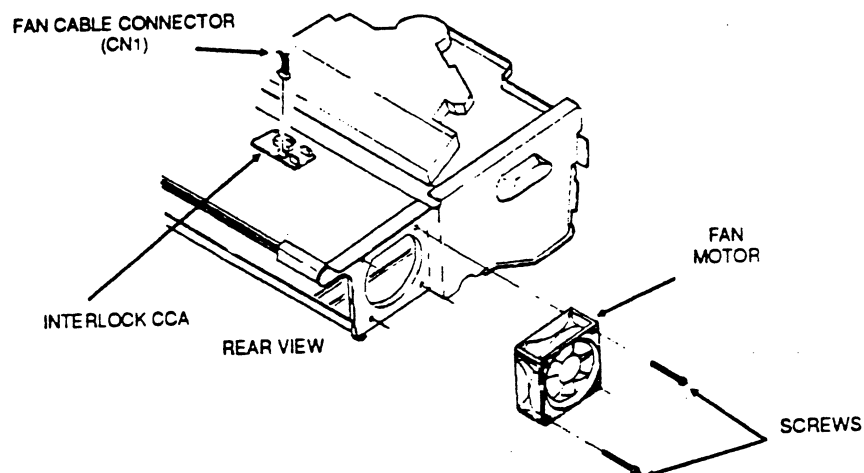
1. Lower the laser/optical unit into position in the upper frame unit.
2. Loosely secure with the three screws.
3. Do the laser/optical unit position adjustment. See *Laser/Optical Unit Position Adjustment* in Section 5.
4. Connect the laser/optical unit cable to the Interlock CCA connector CN36.
5. Install the top cover/face-down exit tray assembly.
6. Install the left and right covers
7. Lower the upper unit.
8. Turn on the printer and continue with normal operations.

REMOVAL/INSTALLATION

FAN MOTOR REMOVAL/INSTALLATION

Removal

1. Turn off the printer.
2. Raise the upper unit.
3. Remove the left and right covers.
4. Remove the top cover/face-down exit tray assembly.
5. Remove the fan motor cable connector (CN1) from the Interlock CCA connector CN35.
6. Remove the motor mounting screws (four) and remove the fan motor



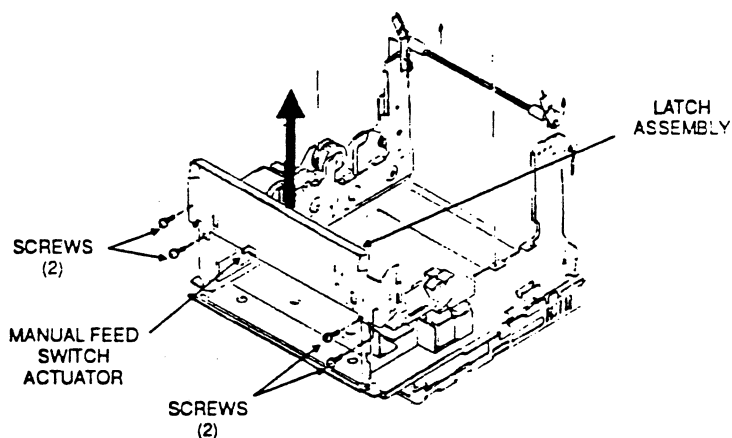
Installation

1. Place the fan motor in position on the frame bracket and secure with four screws.
2. Connect the fan motor cable to the Interlock CCA connector CN35.
3. Install the top cover/face-down tray assembly.
4. Install the left and right covers.
5. Lower and latch the upper unit.
6. Turn on the printer and continue with normal operations.

LATCH ASSEMBLY REMOVAL/INSTALLATION

Removal

1. Turn off the printer.
2. Raise the upper unit.
3. Remove the left and right covers.
4. Remove the front cover.
5. Remove the four screws that secure the latch assembly to the printer frame.
6. Push inward and up on the manual feed switch actuator, and lift the latch assembly up and out of the printer.



Installation

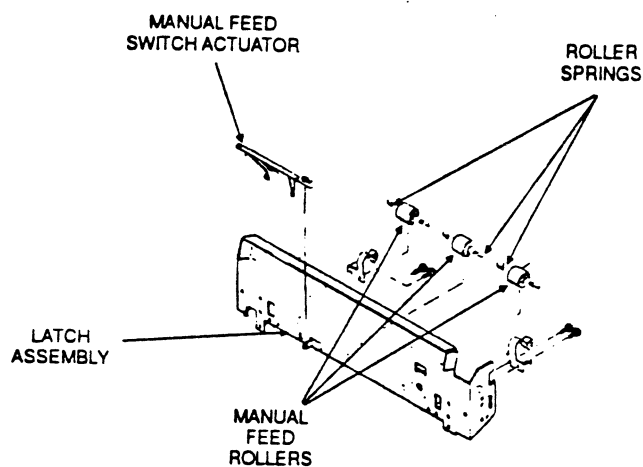
1. While holding the manual feed switch actuator out of the way, position the latch assembly on the printer frame.
2. Install the four latch assembly mounting screws.
3. Install the front cover, left cover and right cover.
4. Close and latch the upper unit.
5. Turn on the printer to continue normal operations.

REMOVAL/INSTALLATION

MANUAL FEED ROLLER REMOVAL/INSTALLATION

Removal

1. Turn off the printer.
2. Raise the upper unit.
3. Remove the left and right covers.
4. Remove the front cover.
5. Remove the latch assembly.
6. Unhook the spring and remove manual feed roller. Repeat for each manual feed roller to be removed.



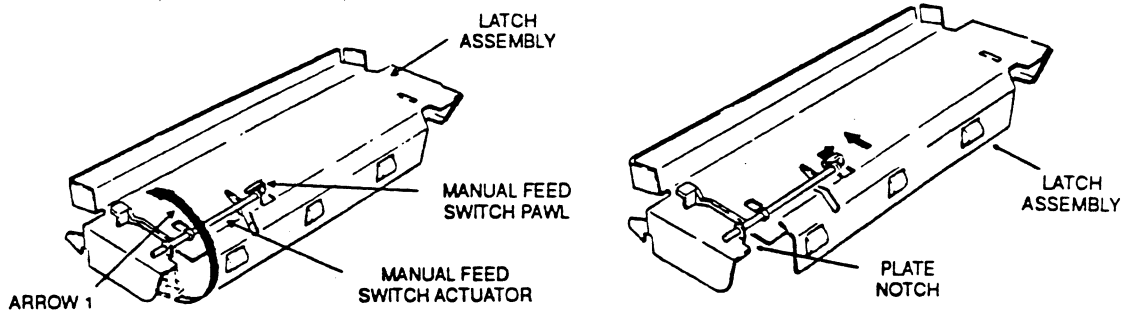
Installation

1. Position the manual feed roller on the base flange of the latch assembly.
2. Hook the ends of the roller spring to the two hooks on the latch assembly base flange.
3. Repeat for each manual feed roller to be installed.
4. Install the latch assembly.
5. Install the front cover, left cover, and right cover.
6. Lower and latch the upper unit.
7. Turn on the printer to continue normal operations.

MANUAL FEED SWITCH REMOVAL/INSTALLATION

Removal

1. Turn off the printer.
2. Raise the upper unit.
3. Remove the left and right covers.
4. Remove the front cover.
5. Remove the latch assembly.
6. Place the latch assembly on a flat surface with the manual feed switch actuator on top.
7. Turn the actuator in the direction of arrow 1 to extend the pawl which is attached to the latch assembly plate.
8. Pull the switch actuator to the right until the switch pawl can be slipped through the notch in the plate.
9. Remove the manual feed switch by moving it backward.



Installation

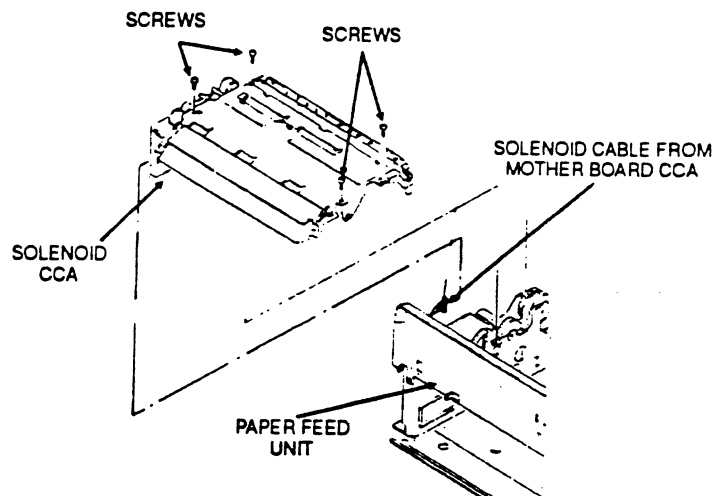
1. Position the manual feed switch on the latch assembly so that the switch pawl can be inserted into the notch in the plate.
2. Move and turn the actuator until the switch and actuator are locked in place.
3. Install the latch assembly.
4. Install the front, right, and left covers.
5. Lower and latch the upper unit.
6. Turn on the printer to continue normal operations.

REMOVAL/INSTALLATION

PAPER FEED UNIT REMOVAL/INSTALLATION

Removal

1. Turn off the printer.
2. Raise the upper unit.
3. Remove the left and right covers.
4. Remove the front cover.
5. Remove the latch assembly.
6. Disconnect the cable from the Solenoid CCA connector CN25.
7. Remove the four screws (two on each side) that attach the paper feed unit to the frame and lift it up and out to remove.



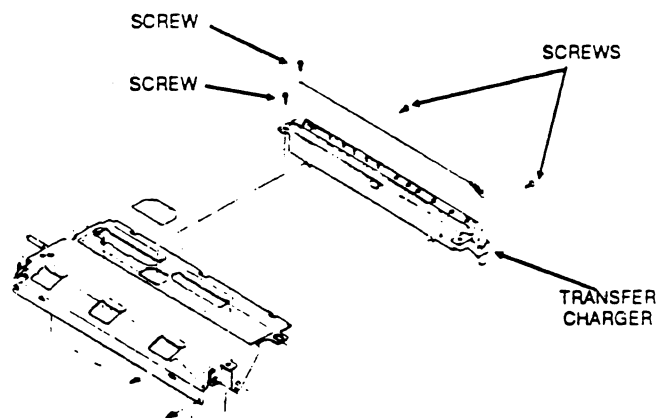
Installation

1. Place the paper feed unit in the printer base with its four mounting flanges aligned with those on the frame.
2. Install the four mounting screws.
3. Install the latch assembly.
4. Install the front, left, and right covers.
5. Lower and latch the upper unit.
6. Turn on the printer to continue normal operations.

TRANSFER CHARGER REMOVAL/INSTALLATION

Removal

1. Turn off the printer.
2. Raise the upper unit.
3. Remove the left and right covers.
4. Remove the front cover.
5. Remove the latch assembly.
6. Remove the paper feed unit.
7. Remove the two screws from each end of the transfer charger and lift it up and out of the paper feed unit.



Installation

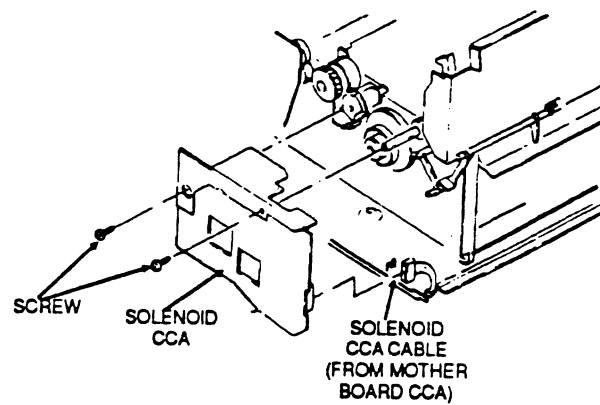
1. Place the transfer charger in position in the paper feed unit.
2. Install the two screws that secure the transfer charger to the paper feed unit.
3. Install the paper feed unit.
4. Install the latch assembly.
5. Install the front, left and right covers.
6. Lower and latch the upper unit.
7. Turn on the printer to resume normal operations.

REMOVAL/INSTALLATION

SOLENOID CCA REMOVAL/INSTALLATION

Removal

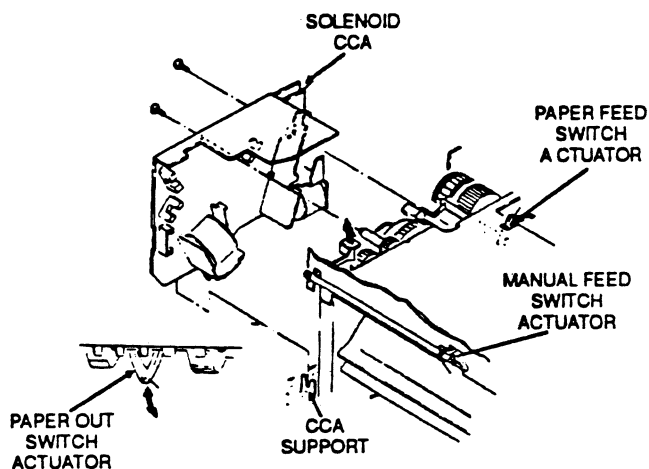
1. Turn off the printer.
2. Raise the upper unit.
3. Remove the left and right covers.
4. Remove the front cover.
5. Remove the latch assembly.
6. Remove the paper feed unit. Disconnect the cable from Solenoid CCA connector CN25 at the same time.
7. Remove two screws and remove the Solenoid CCA.



Installation

CAUTION

When installing the Solenoid CCA, check to be sure the paper in, paper out and manual feed switch actuators move smoothly.



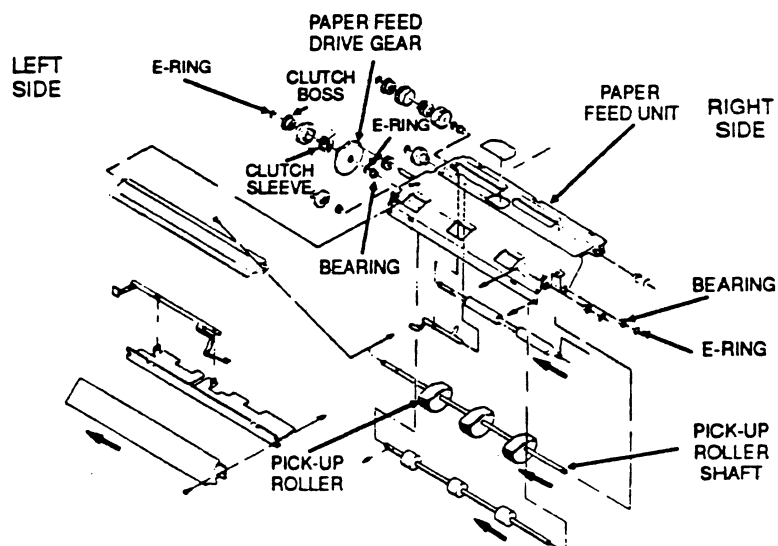
1. Position the Solenoid CCA over the paper feed gears and attach to the printer frame with two screws. Be sure the solenoid latches are seated correctly on the gears.
2. Check the position of the pick-up roller. See Section 5, *Pick-up Roller Position Check*.
3. Install the paper feed unit. Connect the cable to Solenoid CCA connector CN25 at the same time.
4. Install the latch assembly.
5. Install the front, right and left covers.
6. Lower and latch the upper unit.
7. Turn on the printer to continue normal operations.

REMOVAL/INSTALLATION

PICK-UP ROLLER REMOVAL/INSTALLATION

Removal

1. Turn off the printer.
2. Raise the upper unit.
3. Remove the left and right covers.
4. Remove the front cover.
5. Remove the latch assembly.
6. Remove paper feed unit.
7. Remove the Solenoid CCA.
8. Remove the E-ring from the gear end of the pick-up roller shaft and slide the clutch boss, clutch sleeve, clutch spring, and paper feed drive gear off of the shaft.
9. Remove the E-ring and bearing on the left end of the roller shaft.
10. Remove the E-ring and bearing on the right end of the roller shaft.
11. Move the pick-up roller shaft to the left until the end clears the paper feed unit.
12. Raise the pick-up roller shaft and pull the left end out of the paper feed unit to remove it from the printer.



Installation

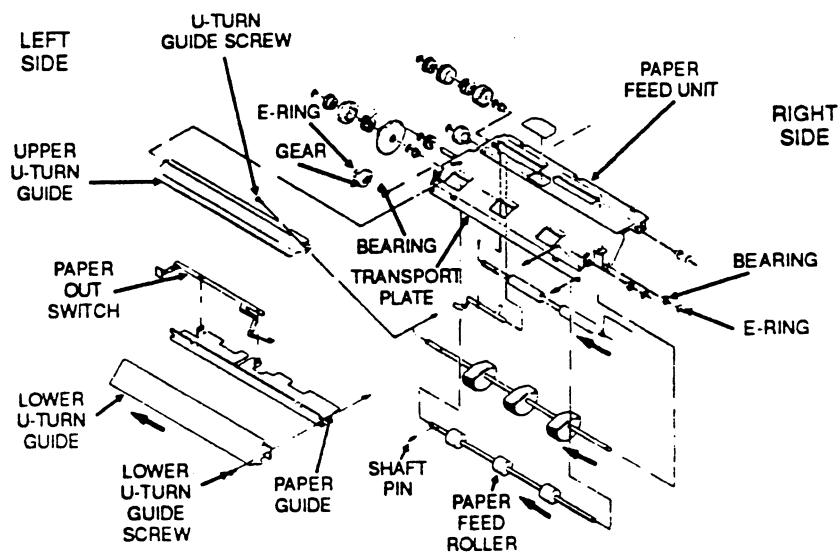
1. Insert the right end of the pick-up roller shaft into its hole in the paper feed unit.
2. Move the pick-up roller shaft to the left and insert the left end into the left side of the paper feed unit.
3. Install the bearing and E-ring on the right end of the roller shaft.
4. Install the E-ring and bearing on the left end of the roller shaft.
5. Slide the paper feed drive gear, clutch spring, clutch sleeve, clutch boss and E-ring on the left end of the pick-up roller shaft.
6. Check the position of the pick-up roller. See Section 5, *Pick-up Roller Position Check*. Adjust if needed.
7. Install the Solenoid CCA.
8. Install the paper feed unit. (Connect the Solenoid CCA cable at the same time.)
9. Install the latch assembly.
10. Install the front, left and right covers.
11. Lower and latch the upper unit.
12. Turn on the printer to continue normal operations.

REMOVAL/INSTALLATION

PAPER FEED ROLLER REMOVAL/INSTALLATION

Removal

1. Turn off the printer.
2. Raise the upper unit.
3. Remove the left and right covers.
4. Remove the front cover.
5. Remove the latch assembly.
6. Remove paper feed unit.
7. Remove the Solenoid CCA.
8. Remove the screw from the right side of the upper U-turn guide and pull the left end of the guide from the transport plate to remove it.
9. Remove the screw from the right side of the lower U-turn guide and move it to the left to remove it from transport plate. The paper guide and paper out switch are removed at the same time.
10. Remove the E-ring from the left end of the paper feed roller shaft.
11. Remove the paper feed gear, pin and bearing from the roller shaft.
12. Remove the E-ring and bearing from the right end of the paper feed roller shaft.
13. Move the paper feed roller shaft to the left until the end of the shaft clears the transport plate.
14. Raise the paper feed roller shaft and move it to the right until the other end of the shaft clears the transport plate.



Installation

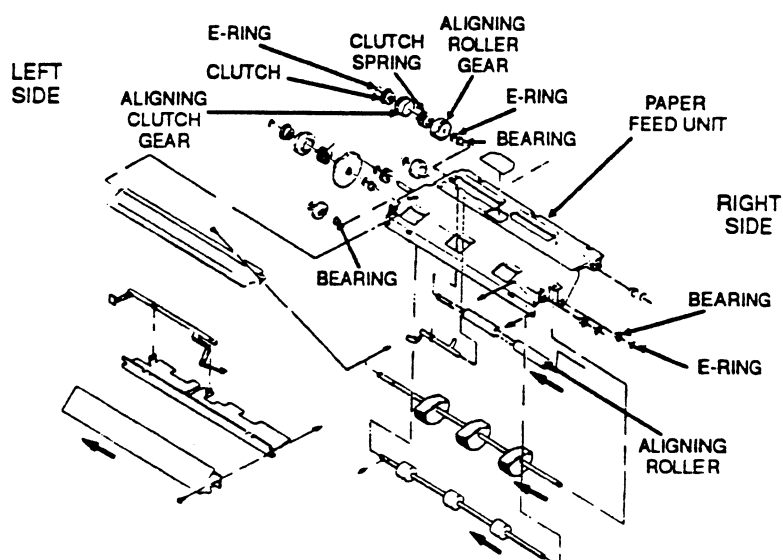
1. Insert the right end of the paper feed roller shaft into the transport plate.
2. Move the paper feed roller shaft to the left and insert the left end into the left side of the transport plate.
3. Install the bearing and E-ring on the right end of the roller shaft.
4. Install the the bearing, pin, gear, and E-ring on the left end of the shaft.
5. Attach the lower U-turn guide to the transport plate.
6. Attach the upper U-turn guide to the transport plate.
7. Install the Solenoid CCA.
8. Install the paper feed unit. (Connect the Solenoid CCA cable at the same time.)
9. Install the latch assembly.
10. Install the front, left and right covers.
11. Lower and latch the upper unit.
12. Turn on the printer to continue normal operations.

REMOVAL/INSTALLATION

ALIGNING ROLLER REMOVAL/INSTALLATION

Removal

1. Turn off the printer.
2. Raise the upper unit.
3. Remove the left and right covers.
4. Remove the front cover.
5. Remove latch assembly.
6. Remove the paper feed unit.
7. Remove the Solenoid CCA.
8. Remove the E-ring, clutch boss, aligning clutch gear, clutch spring and aligning gear from the left end of the aligning roller shaft.
9. Remove the E-ring and bearing from the left end of the roller shaft.
10. Remove the E-ring and bearing from the right end of the aligning roller shaft.
11. Move the roller shaft to the left until the right end clears the transport plate.
12. Raise the aligning roller shaft and move it to the right until it can be removed from the transport plate.



REMOVAL/INSTALLATION

Installation

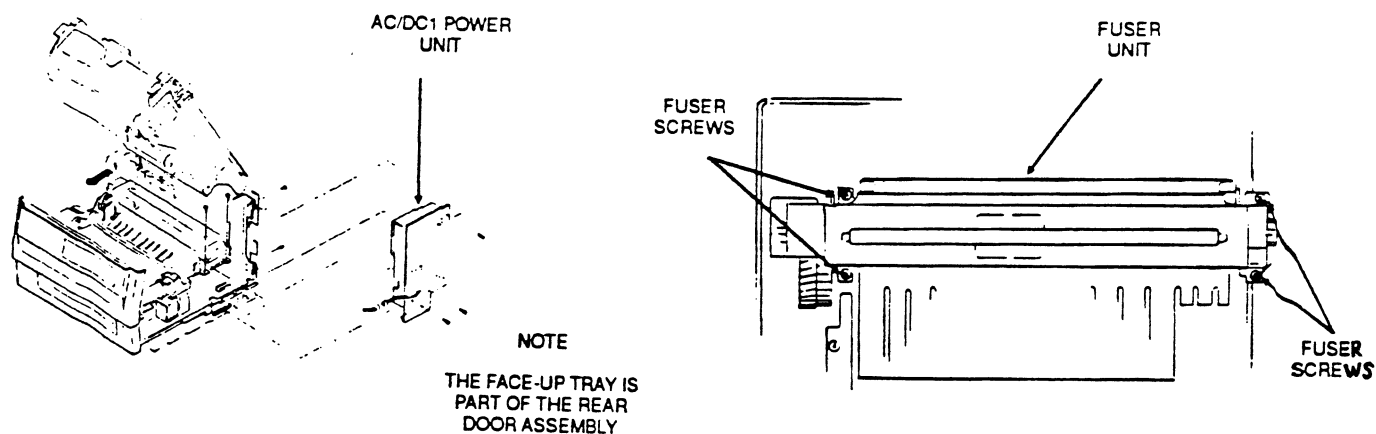
1. Insert the right end of the aligning roller shaft into its hole in the transport plate.
2. Move the aligning roller shaft to the left and insert the left end into the left side of the transport plate.
3. Install the bearing and E-ring on the right end of the roller shaft.
4. Install the E-ring and bearing on the left end of the roller shaft.
5. Slide the aligning roller drive gear, clutch spring, clutch sleeve, clutch boss, and E-ring on the left end of the pick-up roller shaft.
6. Install the Solenoid CCA.
7. Install the paper feed unit. (Connect the Solenoid CCA cable at the same time.)
8. Install the latch assembly.
9. Install the front, left and right covers.
10. Lower and latch the upper unit.
11. Turn on the printer to continue normal operations.

REMOVAL/INSTALLATION

FUSER UNIT REMOVAL/INSTALLATION

Removal

1. Turn off the printer.
2. Raise the upper unit.
3. Remove the right cover.
4. Remove the top cover/face-down exit tray assembly.
5. Remove the AC/DC1 power unit.
6. Open the face-up tray extension.
7. Open the paper turn unit.
8. Remove four screws that attach the fuser unit to the printer base.
9. Lift fuser unit and move it forward out of the lower frame



REMOVAL/INSTALLATION

Installation

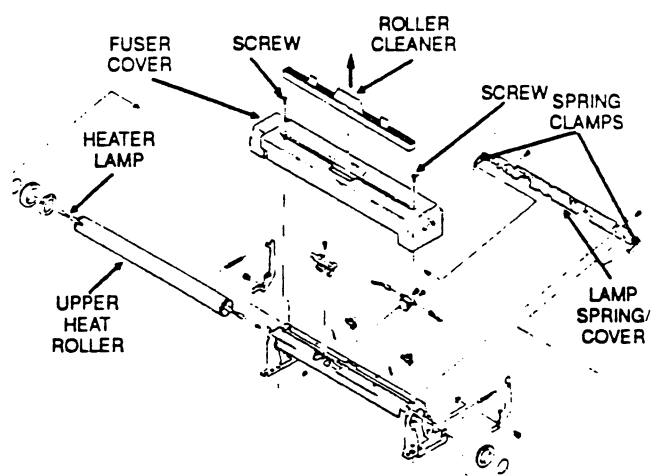
1. Position the fuser unit in the base of the printer.
2. Install the four screws that attach the fuser unit to the base of the printer.
3. Install the AC/DC! power unit.
4. Install the top/cover/face-down exit tray assembly.
5. Install the right cover.
6. Lower and latch the upper unit.
7. Turn on the printer to continue normal operations.

REMOVAL/INSTALLATION

HEATER LAMP REMOVAL/INSTALLATION

Removal

1. Turn off the printer and disconnect the power cord from the electrical outlet.
2. Raise the upper unit.
3. Remove the left and right covers.
4. Remove the top cover/face-down exit tray assembly.
5. Remove the AC/DC1 power unit.
6. Remove the roller cleaner from its slot in the top of the fuser unit.
7. Remove the two fuser cover screws with a short screwdriver.
8. Remove the fuser cover.
9. Separate the heater lamp from spring clamps on each end, and slide it out of the upper heat roller.



REMOVAL/INSTALLATION

Installation

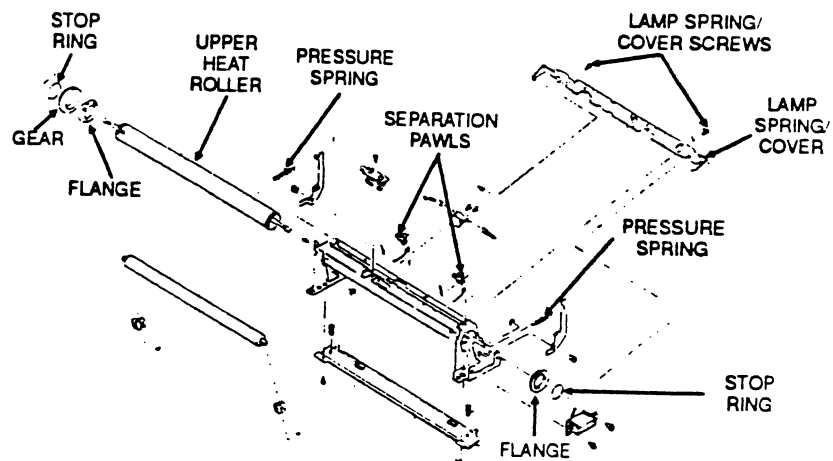
1. Slide the heater lamp into the upper heater roller.
2. Slip the heater lamp between the spring clamps on each end of the roller.
3. Install the fuser cover.
4. Install the roller cleaner.
5. Install the AC/DC1 power unit.
6. Install the top cover/face-down exit tray assembly.
7. Install the right and left covers.
8. Lower and latch the upper unit.
9. Plug in the printer and turn it on to continue normal operations.

REMOVAL/INSTALLATION

UPPER HEAT ROLLER REMOVAL/INSTALLATION

Removal

1. Turn off the printer and disconnect the power cord from the electrical outlet.
2. Raise the upper unit.
3. Remove the right cover.
4. Remove the top cover/face-down exit tray assembly.
5. Remove the AC/DC1 power unit.
6. Remove the fuser unit.
7. Remove the heater lamp.
8. Remove the pressure spring on each side of the fuser unit.
9. Remove the two screws that attach the lamp spring/cover to the fuser unit.
10. Move the two separation pawls away from the surface of the roller.
11. Remove the stop ring, gear and flange from the left end of the upper heater roller.
12. Remove stop ring and flange from the right end of the upper heat roller.
13. Remove upper heat roller.



Installation

CAUTION

To prevent damage to the roller surface, move the two separation pawls away from the roller.

1. Position the upper heater roller on the fuser bracket and install the flange and stop ring on the right end of the roller.
2. Install the flange, gear and stop ring on the left end of the roller.
3. Position the lamp spring/cover on the fuser unit and secure with two screws.
4. Install the pressure springs on each end of the fuser unit.
5. Install the heater lamp.
6. Install the fuser unit.
7. Install the AC/DC1 power unit.
8. Install the top cover/face-down exit tray assembly.
9. Install the right cover.
10. Lower and latch the upper unit.
11. Plug in the printer and turn it on to continue normal operations.

REMOVAL/INSTALLATION

LOWER HEAT ROLLER REMOVAL/INSTALLATION

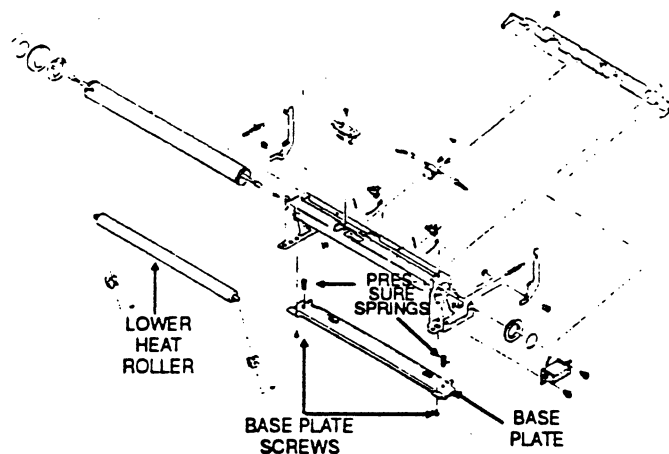
Removal

1. Turn off the printer and disconnect the power cord from the electrical outlet.
2. Raise the upper unit.
3. Remove the right cover.
4. Remove the top cover/face-down exit tray assembly.
5. Remove the AC/DC1 power unit.
6. Remove the fuser unit.

CAUTION

Be careful when removing the base plate. It may pop up because of pressure springs.

7. Remove the two base plate screws and remove the base plate.
8. Remove lower heat roller.



REMOVAL/INSTALLATION

Installation

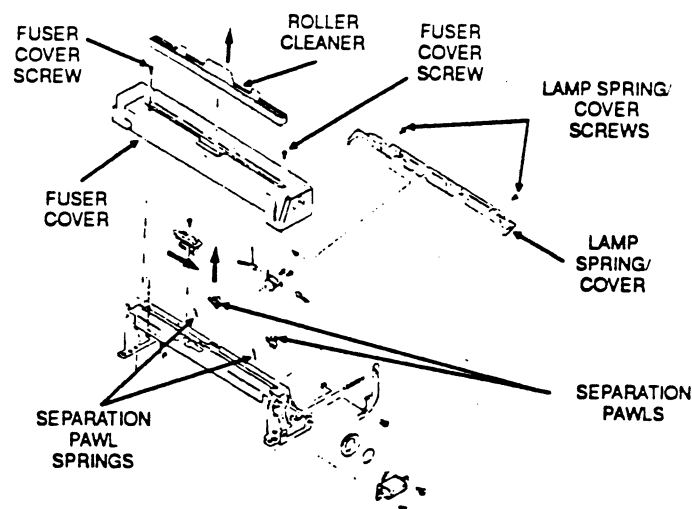
1. Position the base plate with the two pressure springs and lower heater roller on the bottom of the fuser unit and secure loosely with the two base plate screws.
2. Check the position of the pressure springs and roller before tightening the two base plate screws.
3. Install the fuser unit.
4. Install the AC/DC1 power unit.
6. Install the top cover/face-down exit tray assembly.
7. Install the right cover.
8. Lower and latch the upper unit.
9. Plug in the printer and turn it on to continue normal operations.

REMOVAL/INSTALLATION

SEPARATION PAWL REMOVAL/INSTALLATION

Removal

1. Turn off the printer and disconnect the power cord from the electrical outlet.
2. Raise the upper unit.
3. Remove the right cover.
4. Remove the top cover/face-down exit tray assembly.
5. Remove the AC/DC1 power unit.
6. Remove the fuser unit.
7. Remove roller cleaner from its slot in the top of the fuser unit.
8. Remove the two fuser cover screws and remove the fuser cover.
9. Remove the two screws that attach the lamp spring/cover to the fuser unit.
10. Unhook the springs and remove the separation pawls.



Installation

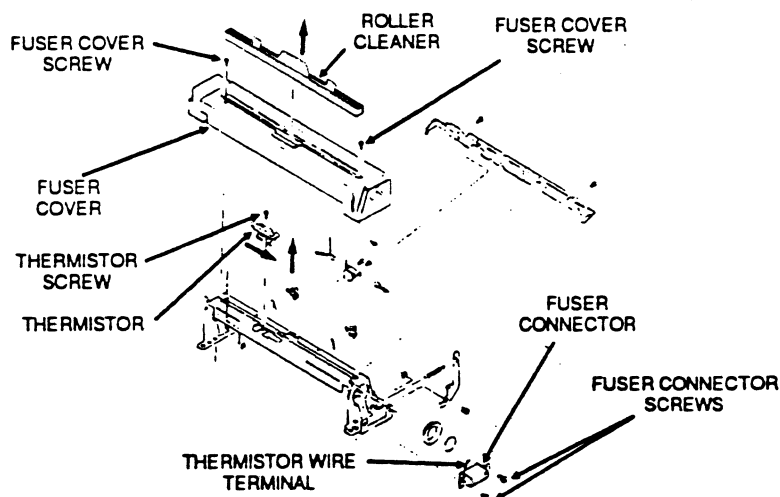
1. Install the separation pawls with the springs.
2. Attach the lamp spring/cover to the fuser unit with two screws.
3. Attach the fuser unit to the printer base with two screws.
4. Place the fuser cover over the rollers and install the two screws.
5. Install the roller cleaner in then slot on the top of the fuser unit.
6. Install the AC/DC1 power unit.
7. Install the top cover/face-down exit tray assembly.
8. Install the right cover.
9. Lower and latch the upper unit.
10. Plug in the printer and turn it on to continue normal operations.

REMOVAL/INSTALLATION

THERMISTOR REMOVAL/INSTALLATION

Removal

1. Turn off the printer and disconnect the power cord from the electrical outlet.
2. Raise the upper unit.
3. Remove the right cover.
4. Remove the top cover/face-down exit tray assembly.
5. Remove the AC/DC1 power unit.
6. Remove the fuser unit.
7. Remove the roller cleaner from its slot in the top of the fuser unit.
8. Remove the two screws and remove fuser cover.
9. Remove the thermistor mounting screw.
10. Slide the thermistor to the right and pull it out upward.
11. Remove the two fuser connector screws.
12. If needed, use a thin, small pin to remove the thermistor wire terminal from the fuser connector (CN1).



Installation

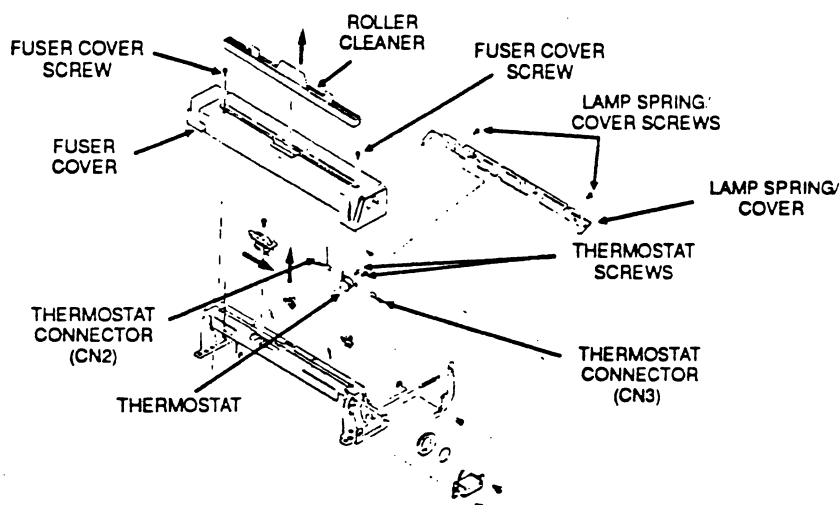
1. Attach the thermistor wire terminal to the fuser connector (CN1).
2. Place the fuser connector in position on the fuser unit and attach with two screws.
3. Slide the thermistor into position on the fuser unit and attach with the screw.
4. Install the fuser unit.
5. Position the fuser cover over the fuser rollers and secure with two screws.
6. Install the roller cleaner in its slot on the top of the fuser unit.
7. Install the AC/DC1 power unit.
8. Install the top cover/face-down exit tray assembly.
9. Install the right cover.
10. Lower and latch the upper unit.
11. Plug in the printer and turn it on to continue normal operations.

REMOVAL/INSTALLATION

THERMOSTAT REMOVAL/INSTALLATION

Removal

1. Turn off the printer and disconnect the power cord from the electrical outlet.
2. Raise the upper unit.
3. Remove the right cover.
4. Remove the top cover/face-down exit tray assembly.
5. Remove the AC/DC1 power unit.
6. Remove the fuser unit.
7. Remove roller cleaner from its slot in the top of the fuser unit.
8. Remove the two screws for the fuser cover
9. Remove the two screws that attach the lamp spring/cover to the fuser unit.
10. Remove the two connectors from the thermostat terminals.
11. Remove two screws and remove thermostat.



Installation

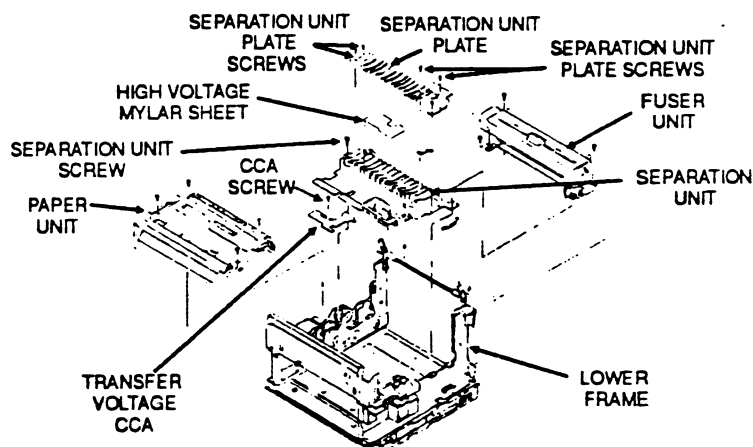
1. Position the thermostat on the fuser unit and attach with two screws.
2. Connect the two wires to the right and left thermostat terminals.
3. Install the fuser unit.
4. Position the fuser cover over the fuser rollers and secure with two screws.
5. Install the roller cleaner in its slot on the top of the fuser unit.
6. Install the AC/DC1 power unit.
7. Install the top cover/face-down exit tray assembly.
8. Install the top cover.
9. Lower and latch the upper unit.
10. Plug in the printer and turn it on to continue normal operations.

REMOVAL/INSTALLATION

SEPARATION UNIT REMOVAL/INSTALLATION

Removal

1. Turn off the printer and disconnect the power cord from the electrical outlet.
2. Raise the upper unit.
3. Remove the left and right covers.
4. Remove the AC/DC1 power unit.
5. Remove the upper frame unit.
6. Remove the paper feed unit.
7. Remove the fuser unit.
8. Carefully remove the high voltage mylar sheet. It is attached with double-sided adhesive tape.
9. Remove the Transfer Voltage CCA mounting screw and remove the CCA from the separation unit.
10. Remove the two screws and lift the separation unit from the lower frame.
11. If needed, remove four additional screws to remove the separation unit plate.



REMOVAL/INSTALLATION

Installation

1. If needed, attach the plate to the separation unit with four screws.
2. Position the separation unit on the frame and install the two mounting screws.
3. Install the Transfer Voltage CCA on the separation unit with one screw.
4. Position the high voltage mylar on the separation unit. Press firmly on the mylar to be sure it adheres to the separation unit.
5. Install the fuser unit.
6. Install the paper feed unit.
7. Install the upper frame unit.
8. Install the AC/DC1 power unit.
9. Install the left and right covers.
10. Lower and latch the upper unit.
11. Plug in the printer and turn it on to continue normal operations.

REMOVAL/INSTALLATION

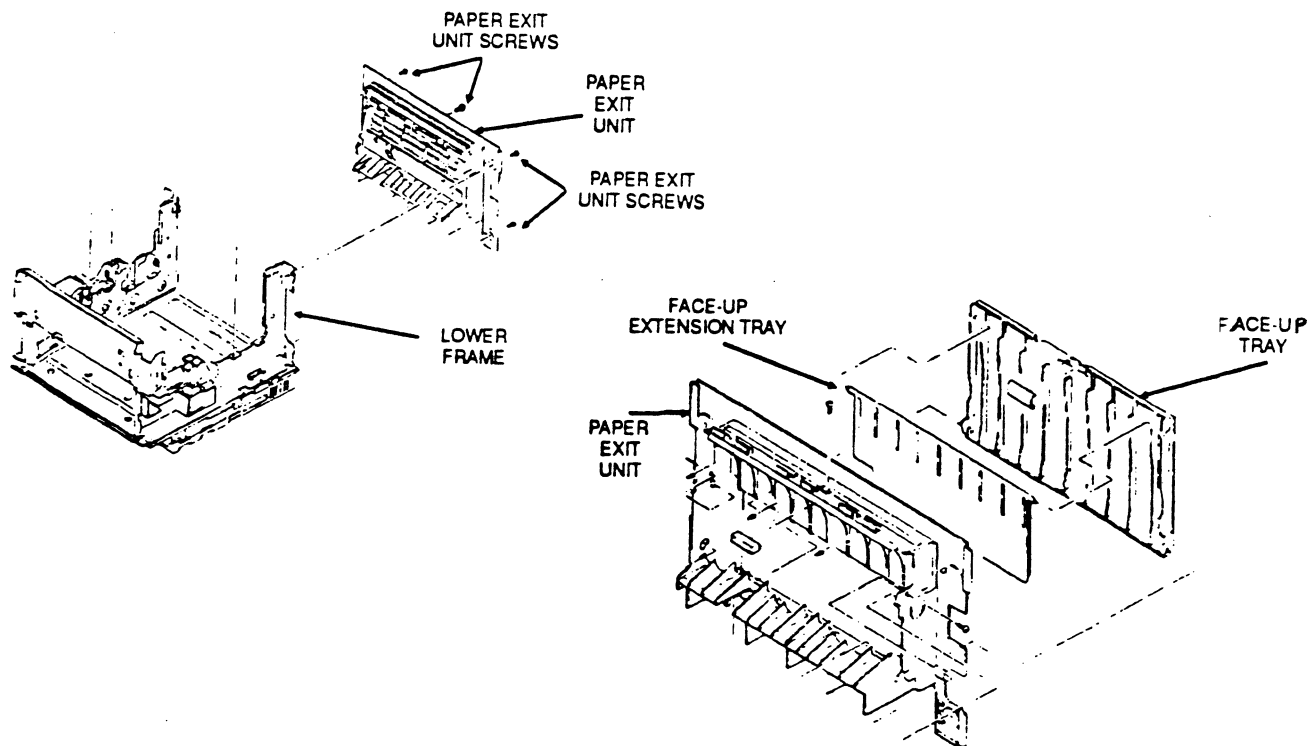
PAPER EXIT UNIT REMOVAL/INSTALLATION

Removal

1. Turn off the printer and disconnect the power cord from the electrical outlet.
2. Raise the upper unit.
3. Remove the left and right covers.
4. Remove the top cover/face-down exit tray assembly.
5. Remove the AC/DC1 power unit.
6. Remove the upper frame unit.
7. Remove the four screws that attach the paper exit unit to the lower frame.
8. Move the paper exit unit from lower frame.

NOTE

If needed, the face-up exit tray can be removed from the paper exit unit by carefully, but firmly pressing inward on the sides of the tray until the pivot on the right rear frame is cleared. The face-up tray extension is removed in the same way.



REMOVAL/INSTALLATION

Installation

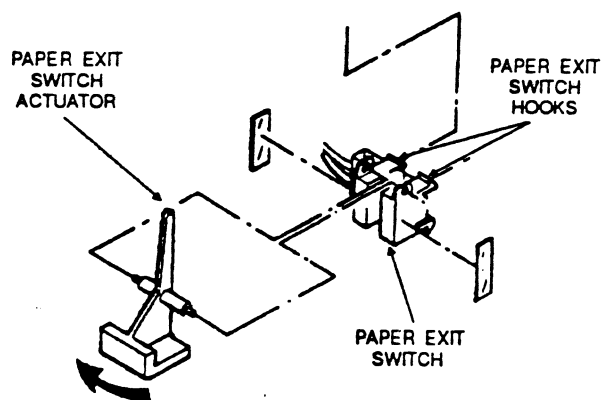
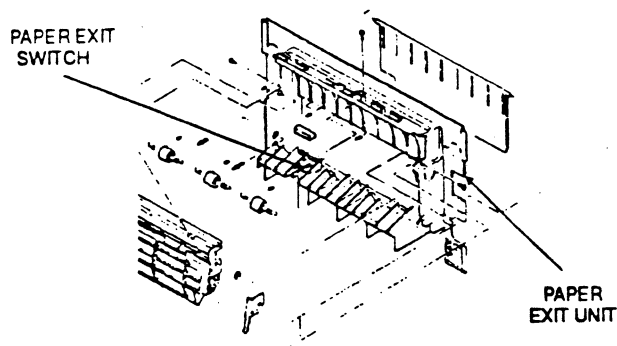
1. Align the paper exit unit with the lower rear frame.
2. Attach the unit to the frame with four screws.
3. Install the upper frame unit.
4. Install the AC/DC1 power unit.
5. Install the top cover/face-down exit tray assembly.
6. Install the left and right covers.
7. Lower and latch the upper unit.
8. Plug in the printer and turn it on to continue normal operations.

REMOVAL/INSTALLATION

PAPER EXIT SWITCH REMOVAL/INSTALLATION

Removal

1. Turn off the printer and disconnect the power cord from the electrical outlet.
2. Raise the upper unit.
3. Remove the left and right covers.
4. Remove the top cover/face-down exit tray assembly.
5. Remove the AC/DC1 power unit.
6. Remove the upper frame unit.
7. Remove the paper exit unit.
8. Unhook the paper exit switch from the paper exit unit. Remove the paper exit switch from paper exit unit.
9. Turn the switch actuator in the direction of the arrow and remove the actuator from the paper exit switch.



REMOVAL/INSTALLATION

Installation

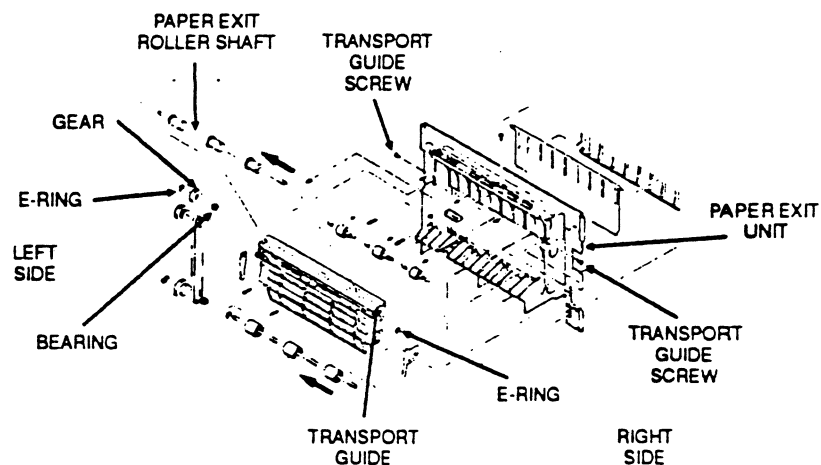
1. Install the actuator on the paper exit switch.
2. Hook the paper exit switch to the paper exit unit plate.
3. Install the paper exit unit.
4. Install the upper frame unit.
5. Install the AC/DC1 power unit.
6. Install the top cover/face-down exit tray assembly.
7. Install the left and right covers.
8. Lower and latch the upper unit.
9. Plug in the printer and turn it on to continue normal operations.

REMOVAL/INSTALLATION

PAPER EXIT ROLLER REMOVAL/INSTALLATION

Removal

1. Turn off the printer and disconnect the power cord from the electrical outlet.
2. Raise the upper unit.
3. Remove the left and right covers.
4. Remove the top cover/face-down exit tray assembly.
5. Remove the AC/DC1 power unit.
6. Remove the upper frame unit.
7. Remove the paper exit unit.
8. Remove the two screws that attach the transport guide to the paper exit unit.
9. Move the transport guide slightly away from the paper exit unit and remove the timing belt from the upper drive gear. Then separate the transport guide from the paper exit unit.
10. Remove the E-ring, gear, and bearing from the left end of the paper exit roller shaft.
11. Remove the E-ring from the right end of the paper exit roller shaft.
12. Move the paper exit roller to the left until the right end of the shaft clears the transport guide.
13. Move the paper exit roller to the right until the left end of the shaft is clear and remove the paper exit roller.



REMOVAL/INSTALLATION

Installation

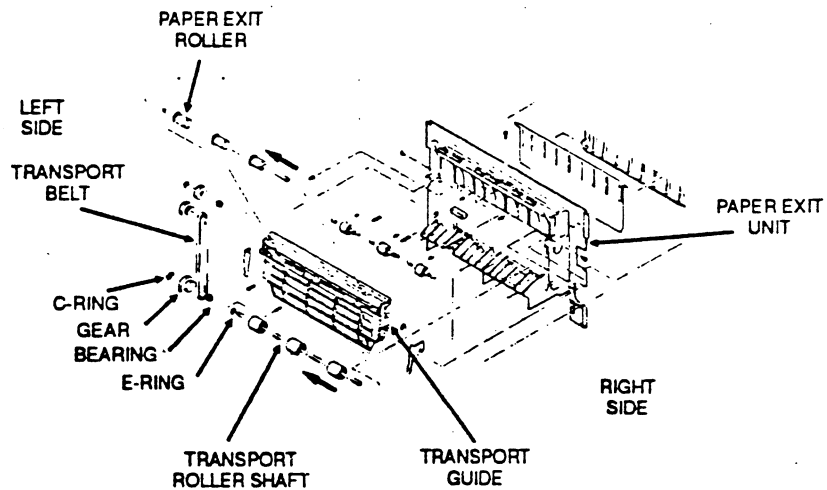
1. Insert the left end of the paper exit roller shaft into the transport guide.
2. Move the shaft to the right to insert the right end of the shaft into the transport guide.
3. Install the E-ring on the right end of the shaft.
4. Install the bearing, gear and E-ring on the left end of the shaft.
5. Attach the transport guide loosely to the paper exit unit.
6. Install the timing belt around the upper drive gear. Be sure the belt is seated.
7. Secure the transport unit to the paper exit unit.
8. Install the paper exit unit.
9. Install the upper frame unit.
10. Install the AC/DC1 power unit.
11. Install the top cover/face-down exit tray assembly.
12. Install the right and left covers.
13. Lower and latch the upper unit.
14. Plug in the printer and turn it on to continue normal operations.

REMOVAL/INSTALLATION

TRANSPORT ROLLER REMOVAL/INSTALLATION

Removal

1. Turn off the printer and disconnect the power cord from the electrical outlet.
2. Raise the upper unit.
3. Remove the left and right covers.
4. Remove the top cover/face-down exit tray assembly.
5. Remove the AC/DC1 power unit.
6. Remove the upper frame unit.
7. Remove the paper exit unit.
8. Remove the C-ring, gear and transport belt from the left end of the transport roller shaft.
9. Remove the bearing and E-ring from the same end of the transport roller shaft.
10. Move the transport roller shaft to the left until the right end clears the transport guide.
11. Move the transport roller shaft to the right until the left end clears the transport guide and the roller can be removed.



REMOVAL/INSTALLATION

Installation

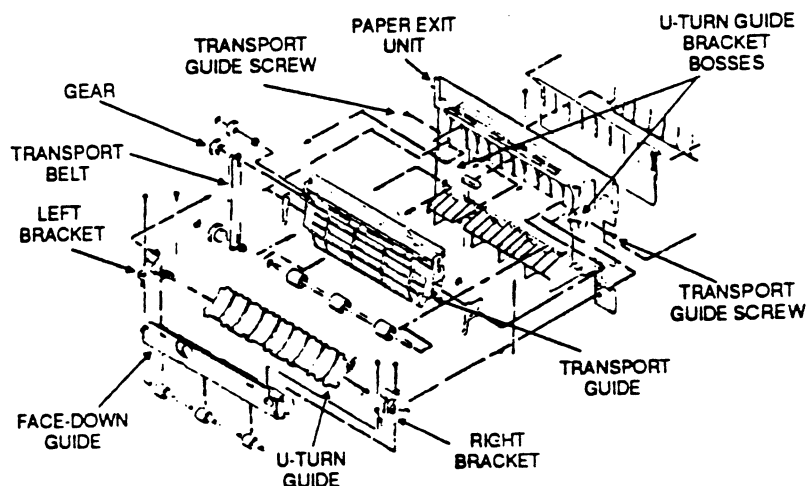
1. Insert the left end of the transport roller shaft into the transport guide.
2. Move the shaft to the right to insert the right end of the shaft into the transport guide.
3. Install the E-ring and bearing on the left end of the shaft.
4. Install the timing belt, gear and C-ring on the same end of the shaft. Be sure the timing belt is completely seated.
5. Install the paper exit unit.
6. Install the upper frame unit.
7. Install the AC/DC1 power unit.
8. Install the top cover/face-down exit tray assembly.
9. Install the right and left covers.
10. Lower and latch the upper unit.
11. Plug in the printer and turn it on to continue normal operations.

REMOVAL/INSTALLATION

U-TURN GUIDE REMOVAL/INSTALLATION

Removal

1. Turn off the printer and disconnect the power cord from the electrical outlet.
2. Raise the upper unit.
3. Remove the left and right covers.
4. Remove the top cover/face-down exit tray assembly.
5. Remove the AC/DC1 power unit.
6. Remove the upper frame unit.
7. Remove the paper exit unit.
8. Remove the two screws that attach the transport guide to the paper exit unit.
9. Move the transport guide slightly away from the paper exit unit and remove the timing belt from the upper drive gear. Then separate the transport guide from the paper exit unit.
10. Remove the four screws that attach the face-down guide to the right and left brackets and remove the face-down guide.
11. Detach the right and left bracket from their bosses on the paper exit unit frame.
12. Remove the brackets from the U-turn guide.



Installation

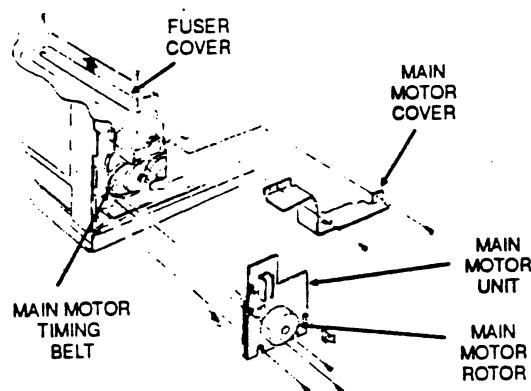
1. Install the right and left brackets on the U-turn guide.
2. Attach the right and left brackets to their bosses on the paper exit unit frame.
3. Use four screws to attach the face-down guide to the left and right brackets.
4. Loosely attach the transport guide to the paper exit unit with two screws.
5. Install the transport belt over the upper drive gear.
6. Completely tighten the two screws that attach the transport guide to the paper exit unit.
7. Install the paper exit unit.
8. Install the upper frame unit.
9. Install the AC/DC1 power unit.
10. Install the top cover/face-down exit tray assembly.
11. Install the right and left covers.
12. Lower and latch the upper unit.
13. Plug in the printer and turn it on to continue normal operations.

REMOVAL/INSTALLATION

MAIN MOTOR UNIT REMOVAL/INSTALLATION

Removal

1. Turn off the printer.
2. Raise the upper unit.
3. Remove the left cover.
4. Disconnect the cables from connectors CN27 and CN28 on the Main Motor CCA.
5. Remove the two screws that attach the main motor cover to the frame and remove the cover.
6. Remove the fuser cover. Two screws attach the cover to the top of the fuser unit.
7. Remove the three screws that attach the main motor unit to the frame and remove the main motor unit.
8. Check the main motor timing belt before installing the main motor. Replace the belt if it is worn or damaged.



Installation

NOTE

When installing the main motor unit, turn the rotor a few times to engage the motor gear with the frame gear.

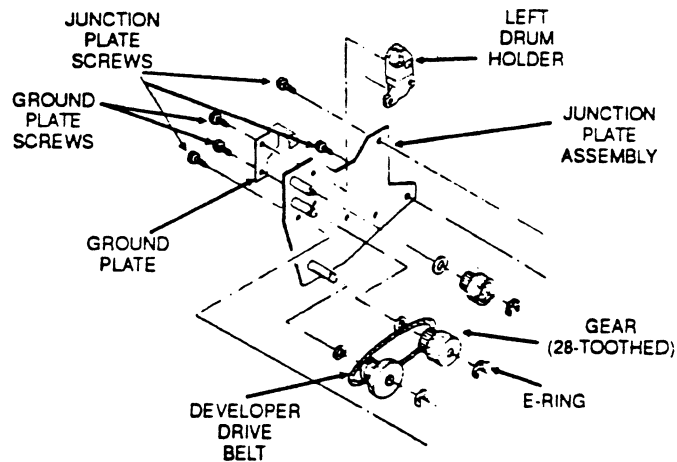
1. Position the main motor unit on the printer frame and turn the motor rotor to engage the motor gears.
2. Install the three motor unit mounting screws.
3. Install the fuser cover.
4. Position the main motor cover on the frame and install the two cover mounting screws.
5. Connect the cables to CN27 and CN26 on the main motor unit.
6. Install the left cover.
7. Lower and latch the upper unit.
8. Turn on the printer to continue normal operations.

REMOVAL/INSTALLATION

DEVELOPER DRIVE BELT REMOVAL/INSTALLATION

Removal

1. Turn off the printer.
2. Raise the upper unit.
3. Remove the left cover.
4. Remove the three screws that attach the junction plate assembly to the frame and remove the assembly.
5. Remove the two screws that attach the ground plate and left drum holder to the junction plate assembly.
6. Remove the E-ring from the 28-toothed gear shaft and remove the gear. The developer drive belt can now be removed.



REMOVAL/INSTALLATION

Installation

1. Position the developer drive belt around the 28-toothed gear shaft and the gear just below the shaft.
2. Slide the 28-toothed gear on the shaft. Be sure the developer drive belt is seated on both gears.
3. Install the E-ring on the end of the gear shaft.
4. Attach the ground plate and left drum holder to the junction plate assembly with two screws.
5. Attach the junction plate assembly to the left frame.
6. Install the left cover.
7. Lower and latch the upper unit.
8. Turn on the printer to continue normal operations.

REMOVAL/INSTALLATION

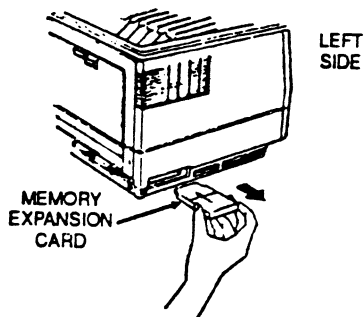
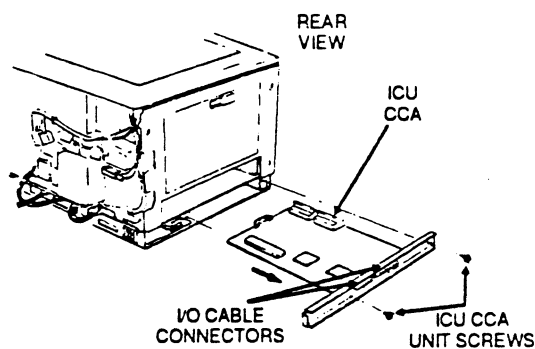
ICU CCA UNIT REMOVAL/INSTALLATION

Removal

NOTE

Before removing the ICU CCA unit, be sure to remove the memory expansion and font cards.

1. If installed, remove the memory expansion card and any font cards.
2. Disconnect the I/O cable
3. Remove the two screws that attach the ICU CCA unit to the printer frame..
4. Alternately insert the blade of a screwdriver into the slots in the ICU CCA bracket and carefully use it as a lever to loosen the ICU CCA.
5. Pull the ICU CCA unit straight out from the back of the printer.



REMOVAL/INSTALLATION

Installation

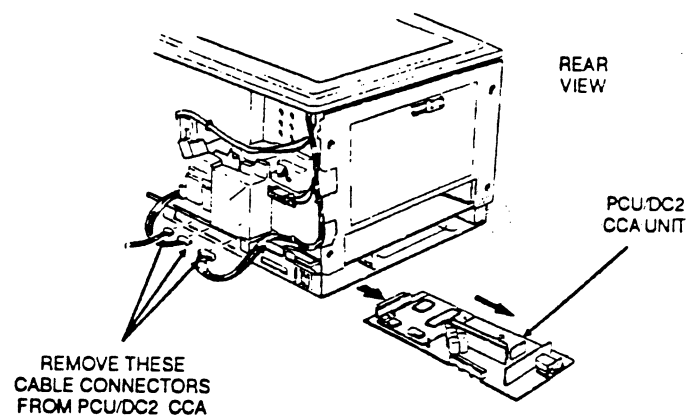
1. Slide the ICU CCA unit into its slot in the back of the printer.
2. Push firmly on the front, exposed edge of the unit to seat the ICU CCA into its Mother Board CCA connector.
3. Install the two screws that attach the ICU CCA unit bracket to the frame.
4. Connect the I/O cable to the correct interface connector.
5. Install the memory expansion card and font cards if used.
6. Turn on the printer to continue normal operations.

REMOVAL/INSTALLATION

PCU/DC2 CCA UNIT REMOVAL/INSTALLATION

Removal

1. Turn off the printer and disconnect the power cord from the electrical outlet.
2. Raise the upper unit.
3. Remove the right cover.
4. Remove the AC/DC1 power unit.
5. Remove the ICU CCA unit.
6. Note their location and disconnect all cable connectors from the PCU/DC2 CCA unit connectors.
7. Slide the PCU/DC2 CCA unit straight out from the rear of the printer.



REMOVAL/INSTALLATION

Installation

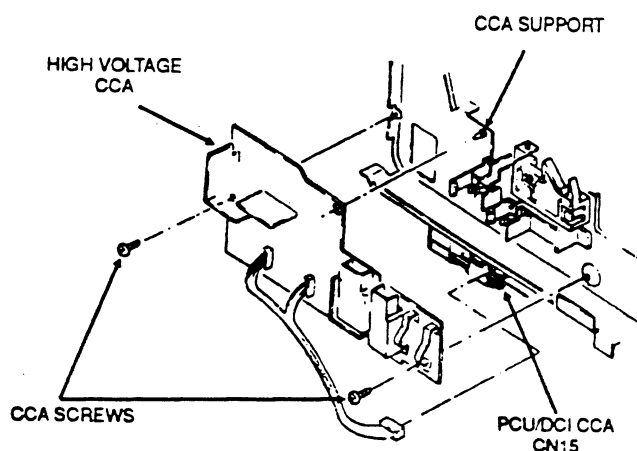
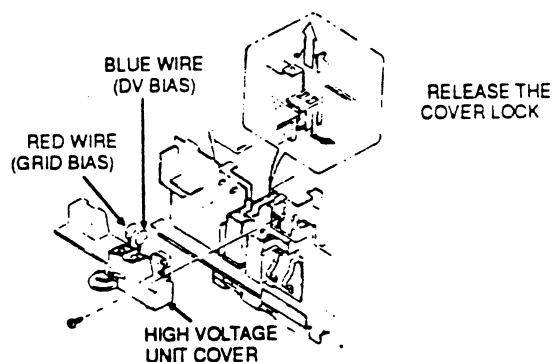
1. Slide the PCU/DC2 CCA unit into its slot in the back of the printer.
2. Connect the three cables to the PCU/DC2 CCA connectors CN15, CN14, and CN17.
3. Install the ICU CCA unit.
4. Install the AC/DC1 power unit.
5. Install the right cover.
6. Lower and latch the upper unit.
7. Plug in the printer and turn it on to continue normal operations.

REMOVAL/INSTALLATION

HIGH VOLTAGE CCA REMOVAL/INSTALLATION

Removal

1. Turn off the printer.
2. Raise the upper unit.
3. Remove the left and right covers.
4. Remove the front cover.
5. Remove the lock unit.
6. Remove the paper feed unit.
7. Remove the high voltage unit cover.
8. Disconnect the cable connector from CN15 on the PCU/DC1 CCA.
9. Remove the two screws that attach the High Voltage CCA to the CCA support, and remove the CCA.



REMOVAL/INSTALLATION

Installation

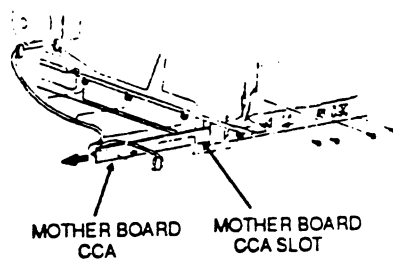
1. Position the High Voltage CCA unit on the CCA supports on the frame.
2. Install the two CCA mounting screws.
3. Connect the cable to CN15 on the PCU/DC1 CCA.
4. Install the high voltage unit cover and lock the cover lock.
5. Install the paper feed unit.
6. Install the lock unit.
7. Install the right and left covers
8. Lower and latch the upper unit.
9. Turn on the printer to continue normal operations.

REMOVAL/INSTALLATION

MOTHER BOARD CCA REMOVAL/INSTALLATION

Removal

1. Turn off the printer and disconnect the power cord from the electrical outlet.
2. Raise the upper unit.
3. Remove the left and right covers.
4. Remove the front cover.
5. Remove the AC/DC1 power unit.
6. Remove the ICU CCA unit.
7. Remove the PCU/DC2 CCA unit.
8. Disconnect the Solenoid CCA and Main Motor CCA cable connectors from CN24 and CN26 on the Mother Board CCA.
9. Cut the tie wrap and slide the Mother Board CCA out of the printer.



REMOVAL/INSTALLATION

Installation

1. Slide the Mother Board CCA into its slot in the front of the printer.
2. Use a cable tie to secure the cabling.
3. Install the PCU/DC2 CCA unit.
4. Install the ICU CCA unit.
5. Install the AC/DC1 power unit.
6. Install the front cover.
7. Install the right and left covers.
8. Lower and latch the upper unit.
9. Plug in the printer and turn it on to continue normal operations.

SECTION 5. ADJUSTMENTS

This section tells you how to check and adjust the paper feed pick-up roller position to minimize or correct paper feed problems. It also tells you how to check the unprintable area of a page and make adjustments to the laser/optical unit and the top and left unprintable areas.

PICK-UP ROLLER POSITION

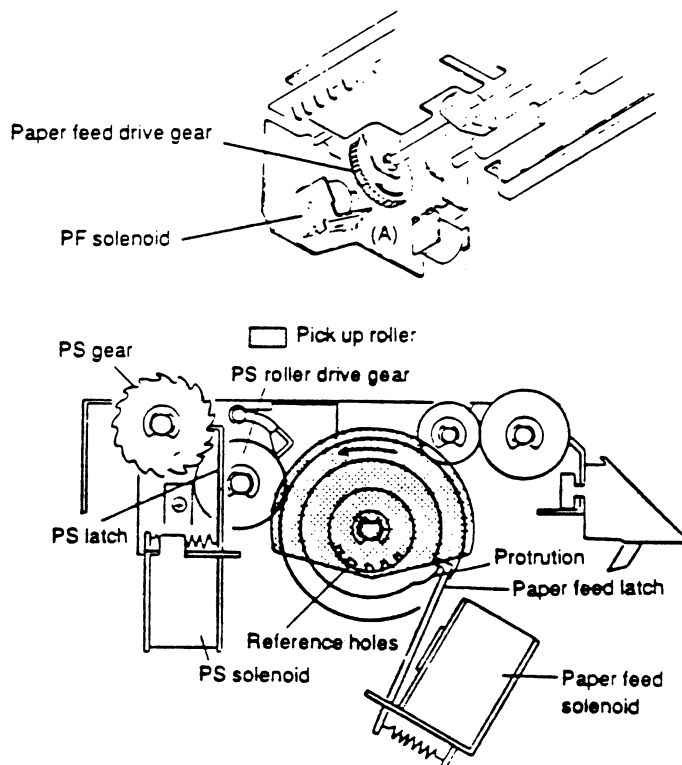
Adjustment is required for any of the following reasons:

- When paper jams occur frequently with no apparent reason.
- After the pick-up roller assembly is replaced.

Pick-up Roller Position Check

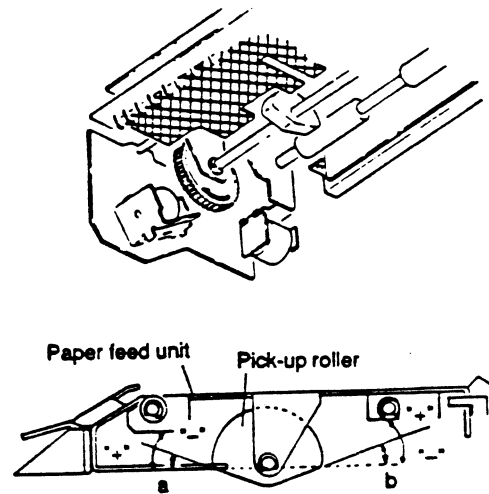
To check the position of the pick-up roller:

1. Remove the paper feed unit from the printer. See *Paper Feed Unit Removal/Installation* in Section 4.
2. As shown in the illustration below, turn the paper feed drive gear until the clutch sleeve projection makes contact with the paper feed solenoid.



ADJUSTMENTS

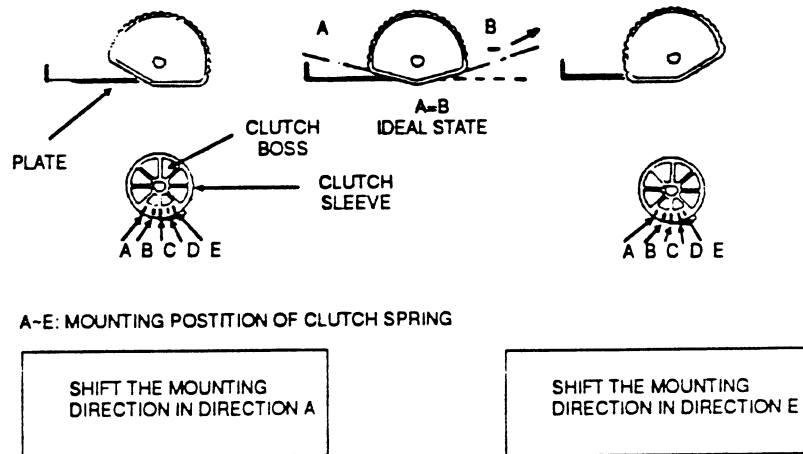
3. Check the angles formed by the lower surface of the pick-up roller and the guide plate to confirm that angle A and angle B are equal and within the 10 ± 5 degrees range.



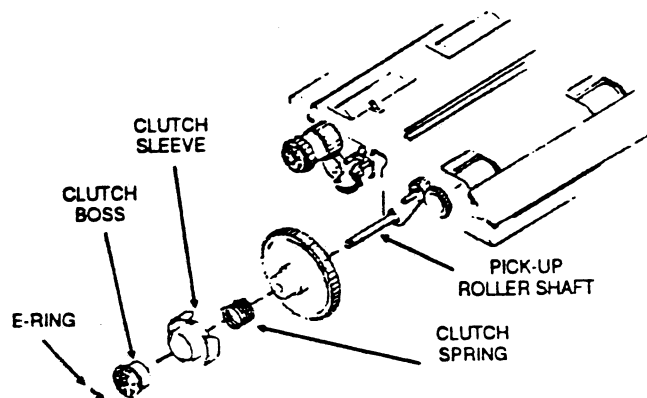
4. If the angles are within the allowable range, no adjustment is needed. If the angles are outside the allowable range, the pick-up roller adjustment must be made.

Pick-up Roller Adjustment

The pick-up roller position is adjusted by changing the position of the clutch spring. The illustration below shows how to determine the clutch spring position **after** observing the angle of the pick-up roller. To change the position of the clutch spring, follow the procedure below.



1. Remove the Solenoid CCA. See *Solenoid CCA Removal/Installation* in Section 4.
2. Remove the E-ring on the left end of the pick-up roller shaft.
3. Remove the clutch boss, clutch spring, and clutch sleeve from the pick-up roller shaft.



ADJUSTMENTS

4. Adjust the position of clutch spring on clutch boss as required. For example, if angle A is greater than angle B, shift the clutch spring toward reference hole A as shown in the illustration above.
5. Install the clutch sleeve, clutch spring, and clutch boss on the left end of the pick-up roller shaft.
6. Check the angles again. If the two angles are still outside the specified range, readjust the position of clutch spring. If it is within the allowable range, then attach the E-ring on the left end of the pick-up roller shaft.
7. Install the paper feed unit. See *Paper Feed Unit Removal/Installation* in Section 4.

NOTE

While the clutch is apart, apply a recommended lubricant to the clutch spring.

UNPRINTABLE AREA CHECK

The printer cannot print to the edges of a physical page. Any attempt to print in this unprintable area will result in clipping (partial printing) of characters or data loss. The unprintable area can be adjusted to maximize the print area. The effective print area, however, is specified by the selected printer emulation. To recognize possible emulation-related printing area problems, read the paragraphs on Effective Printing Width and Print Margins.

Effective Print Width

The tables on the next page give the effective print width for each paper size in the portrait and landscape modes. For emulations other than HPLJ2, the horizontal effective print width is 2,400 dots for the A4 size. Therefore, you can print 80 characters on a single line if printed in a 10 cpi fixed pitch. You must note, however, that some part of the characters might not be printed if the paper is skewed or a pitch change is made within the printed page.

CAUTION

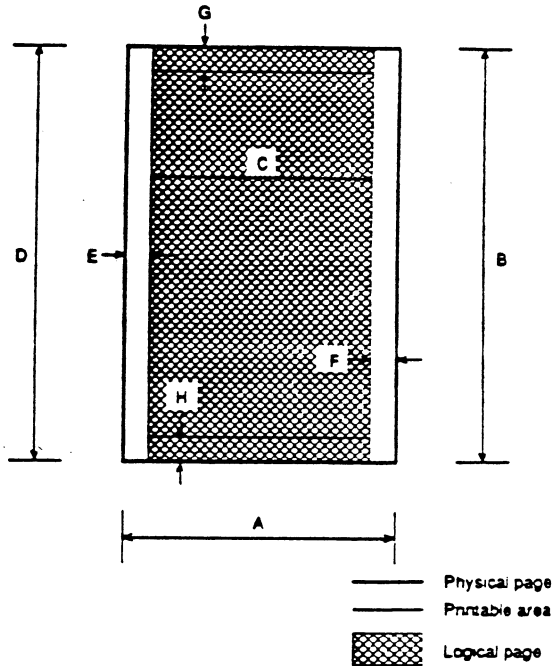
Do not continue to operate the printer when clipped or missing characters occur. The printer could be damaged.

ADJUSTMENTS

Portrait

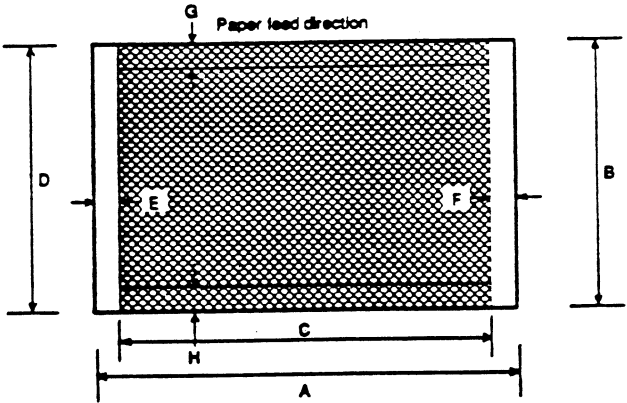
PAPER SIZE	A	B	C	D	E	F	G	H
LETTER	2550	3300	2400	3300	50	100	60	60
LEGAL	2550	4200	2400	4200	50	100	60	60
EXECUTIVE	2175	3150	2025	3150	50	100	60	60
INVOICE	1650	2550	1500	2550	50	100	60	60
A4 (HP)	2480	3507	2338	3507	50	92	60	58
A4 (4EML)	2480	3507	2400	3507	50	30	60	58
B5	2149	3035	2007	3035	50	92	60	58
COM-10	1237	2850	1087	2850	50	100	60	60
MONARC	1162	2250	1012	2250	50	100	60	60
C5	1913	2704	1771	2704	50	92	60	58
DL	1299	2598	1157	2598	50	92	60	58

Margin is fixed to A4 (4EML) for the four emulation. (Portrait only)



Landscape

PAPER SIZE	A	B	C	D	E	F	G	H
LETTER	3300	2550	3180	2550	60	60	50	100
LEGAL	4200	2550	4080	2550	60	60	50	100
EXECUTIVE	3150	2175	3030	2175	60	60	50	100
INVOICE	2550	1650	2430	1650	60	60	50	100
A4	3507	2480	3389	2480	60	58	50	92
B5	3035	2149	2917	2149	60	58	50	92
COM-10	2850	1237	2730	1237	60	60	50	100
MONARC	2250	1162	2130	1162	60	60	50	100
C5	2704	1913	2586	1913	60	58	50	92
DL	2598	1299	2480	1299	60	58	50	92



Margin is fixed to A4 (4EML) for the four emulation. (Portrait only)

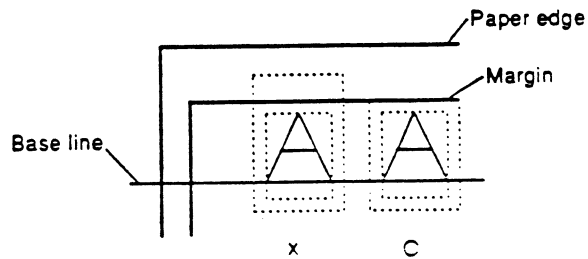
ADJUSTMENTS

Print Margins

In some cases data is not printed because the characters are positioned on the printed page in such a way that the character cell height or width falls into the unprintable area.

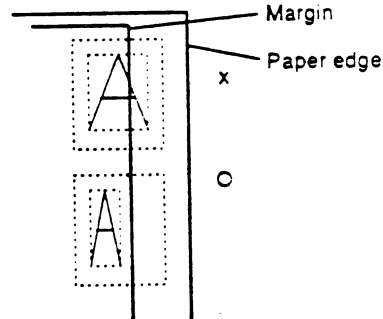
Top Margin

If the vertical position value minus the baseline exceeds the printable area, printing will not take place. In other words, the location of the top of the cell determines whether the data is printed.



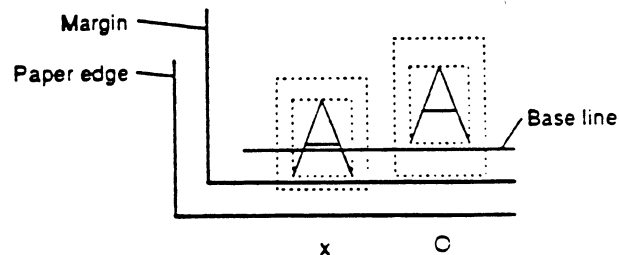
Left Margin

If the horizontal value plus the left offset plus the character width exceeds the printable area, printing will not take place or the character will be printed on the next line depending on the CR or LF commands.



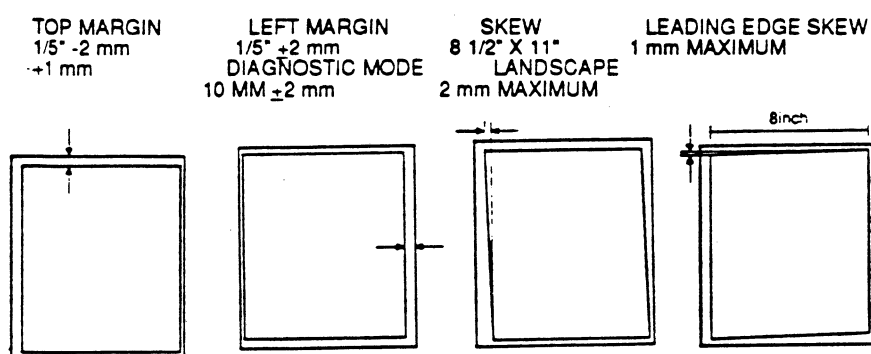
Bottom Margin

If the vertical position value plus the cell height minus the base position exceeds the printable area, printing will not take place or the data will be printed on the next page depending on the LF command.



Unprinted Margin Area Check

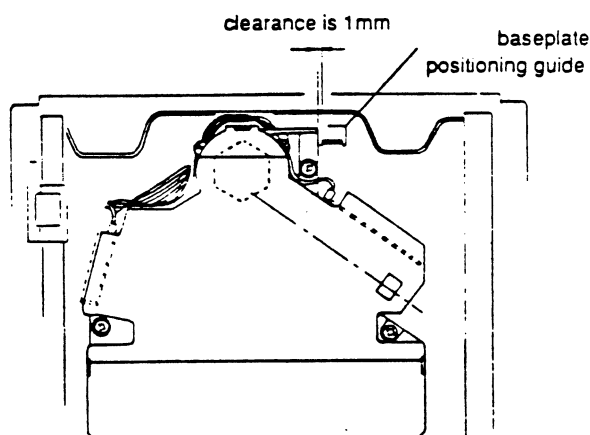
To check the unprintable area, print either SELF TEST #2 or enter the Diagnostic Mode and print a TEST PRINT of the lateral striped pattern. Measure the top and left margins. Note that the left margin measurement is different when using the diagnostic mode lateral striped pattern.



Laser/Optical Unit Position Adjustment

If the leading edge skew is out of limit (0 to 1 mm within an 8 inch width), it has to be adjusted in the following manner:

1. If the print on the right side is high, increase the clearance between the laser/optical unit base plate positioning guide and the case protrusion by 0.5 mm. (Base clearance is 1 mm.) If the print on the left side is high, decrease the clearance by 0.5 mm.



2. Turn on the printer while at the same time pressing the MENU and ENTER/MENU RESET keys to enter the diagnostic mode.
3. Press the MENU key to scroll to TEST PRINT, then push the FORM FEED switch to print a page of the lateral striped test pattern.
4. Measure the leading edge unprinted area to make sure it is within the limits. Repeat from step 1 if more adjustment is needed.

Top Margin Adjustment

ADJUSTMENTS

Top Margin Adjustment

If the top margin of the printout is not within the limits of 3.1 to 6.1 mm, adjust it as follows:

1. Turn the printer on while at the same time pressing the MENU and ENTER/MENU RESET keys to enter the diagnostic mode.
2. Press the MENU key to scroll to TOP MARGIN.
3. If the top margin is below the limit, push the ▲ key. The value will increment 1/100th inch (0.25 mm) each time the ▲ key is pressed. Press the ▼ key, if the margin is above the limit.
4. Push FORM FEED to print the lateral stripe printout and measure the top margin area again.
5. Repeat steps 3 and 4 until the top margin is within the limits and then turn off the printer.

Left Margin Adjustment

If the left margin is not within the limits of 4.2 mm $\pm$ 2mm, use the following procedure to adjust it.

1. Turn power on while at the same time pressing the MENU and ENTER/MENU RESET key to enter the diagnostic mode.
2. Push the MENU key to scroll to LEFT MARGIN.
3. If the left margin was below the limit, push the ▲ key. The value increments by 1/100th inch (0.25 mm) each time the key is pressed. Press the ▼ key, if it was above the limit.
4. Push the FORM FEED key to the lateral stripe printout and measure the margin area.
5. Repeat steps 3 and 4 until the left margin falls within the limits. Turn off the printer when adjustments are completed.

TROUBLESHOOTING

SECTION 6. TROUBLESHOOTING

This section will help you recognize and solve problems with the printer. The first part describes the print and diagnostic tests available for checking the printer. The second part concentrates on print quality problems. The third part deals with problems related to error messages and codes.

DIAGNOSTIC TOOLS

Print Tests

Print engine conditions can be checked with the SELF TEST #2 printout or and the Diagnostic Mode TEST PRINT. The SELF TEST #2 printout is a sliding pattern of the resident font. SELF TEST #2 is entered with the control panel FONT PRINTOUT/TEST key which has been described in other sections of this manual. The Diagnostic Mode TEST PRINT is a lateral striped pattern.

Other tests are available in the Diagnostic mode. The Diagnostic Mode is more fully explained below.

Diagnostic Mode

The Diagnostic Mode is provided for the service technician to check the conditions of each section of the print engine. See the table on the next page for the available diagnostic functions.

1. To enter the DIAGNOSTIC mode, press the MENU and ENTER keys when turning on the printer.
2. Select diagnostic menu items with the MENU and ▲ and ▼ keys and execute the functions by pressing the FORM FEED key.
3. To return to the MENU during execution of diagnostic function, press the RESET key.

When the printer enters into the Diagnostic Mode:

- All LED's are lighted for one second.
- PCU DIAG MODE X is displayed. (X=PCU ROM version)
- When a diagnostic mode function is being executed the DATA indicator blinks.

NOTE

Except for TEST PRINT, no error detection occurs in the Diagnostic Mode.

Menu	Function	Execution	Cancel																														
TOP MARGIN XX	Leading edge adjustment. Select with ▲ and ▼ keys. Print a sheet with FORM FEED. XX = 00 to 99 (1 count = 1/100"). Adjust the value so that the top margin is 1/5" -2 mm, +1 mm.	FORM FEED	After printing																														
LEFT MARGIN XX	Left margin adjustment. Set with ▲ and ▼ keys. Print a sheet with FORM FEED. XX = 00 to 99 (1 count = 1/100"). Adjust the value so that the left margin is 10 ±2 mm. (When set within the above range, the left margin will be 1/6" ±2 mm when SELF TEST #2 is performed.)	FORM FEED	After printing																														
SW SCAN XX	Switch check. Select with ▲ and ▼ keys. XX = 01-04. When 03 is executed, EXPFS and PFMD are on. When 04 is executed, ENFMD is on.	FORM FEED	RESET																														
<table><tr><th>SW NO.</th><th>LED</th><th>READY</th><th>MANUAL</th><th>ONLINE</th><th>DATA</th></tr><tr><td>01</td><td></td><td>DOOR OPEN</td><td>PIN*</td><td>HFIN*</td><td>POUT*</td></tr><tr><td>02</td><td></td><td>PE*</td><td>PS1</td><td>PS2</td><td>PS3</td></tr><tr><td>03</td><td></td><td>EXPE*</td><td>EXPS1</td><td>PXPS2</td><td>EXPS3</td></tr><tr><td>04</td><td></td><td>ENPE</td><td>ENCON</td><td>EXCON</td><td>TE</td></tr></table>				SW NO.	LED	READY	MANUAL	ONLINE	DATA	01		DOOR OPEN	PIN*	HFIN*	POUT*	02		PE*	PS1	PS2	PS3	03		EXPE*	EXPS1	PXPS2	EXPS3	04		ENPE	ENCON	EXCON	TE
SW NO.	LED	READY	MANUAL	ONLINE	DATA																												
01		DOOR OPEN	PIN*	HFIN*	POUT*																												
02		PE*	PS1	PS2	PS3																												
03		EXPE*	EXPS1	PXPS2	EXPS3																												
04		ENPE	ENCON	EXCON	TE																												
NOTE: Switch checks marked with * should be done with the upper unit closed.																																	
COUNTER SET XXX	FOR FACTORY USE ONLY.																																
NVRAM INITIAL	FOR FACTORY USE ONLY.																																
COUNTER RESET	FOR FACTORY USE ONLY.																																
DIAG EJECT	End of diagnostic	FORM FEED																															

TROUBLESHOOTING

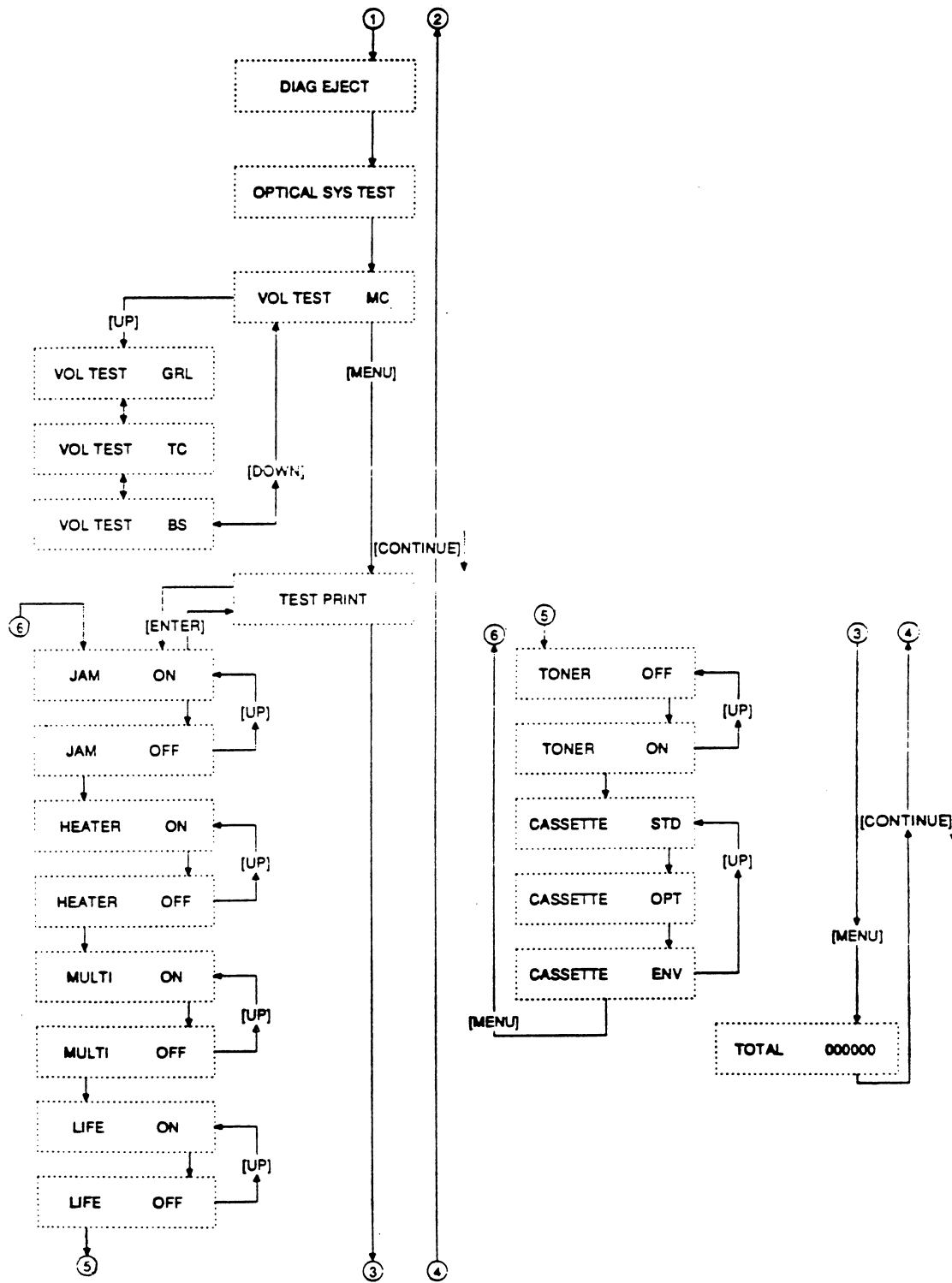
Menu	Function	Execution	Cancel
OPTICAL SYS TEST	Optical system test CAUTION If this test is performed for a long time with the drum cartridge installed, the drum may be damaged. Cover open and C3 are not detected. Polygon motor and laser are on. When SYNC is detected, ONLINE lights. With the cover open, the polygon motor and the laser are not turned on.	FORM FEED	RESET
VOL TEST XX	High Voltage CCA test (30 seconds ON) Select with ▲ and ▼ keys. XX = MC--Main corona, grid HIGH GR--Grid LOW TC--Transfer charger BS--Main charger & bias Note: If the drum cartridge is not installed, the grid bias and the DV bias are not output. CAUTION If this test is performed for a long time, the drum may be damaged.	FORM FEED	RESET
TEST PRINT	Test print Select MODE with the MENU, ENTER, ▲, and ▼ keys. JAM XXX XXX = ON: YES OFF: NO Set to OFF to operate without paper. HEATER XXX XXX = ON: Temperature control YES OFF: Heater OFF MULTI XXX XXX = ON: Single OFF: Multiple LIFE XXX XXX = ON: Life over error YES OFF: Life over error NO When set to ON, the printer will stop at LIFE OVER condition.	FORM FEED	RESET After printing

TROUBLESHOOTING

Menu	Function	Execution	Cancel
	CASSETTE XXX XXX = STD: Standard cassette OPT: Option cassette ENV: Envelope		
	TONER XXX XXX = ON: Toner empty YES OFF: Toner empty NO When set to ON, the printer will stop at a Toner Empty condition.		
TOTAL XXXXXX	Total counter display		

1

DIAGNOSTIC MODE MENU STRUCTURE



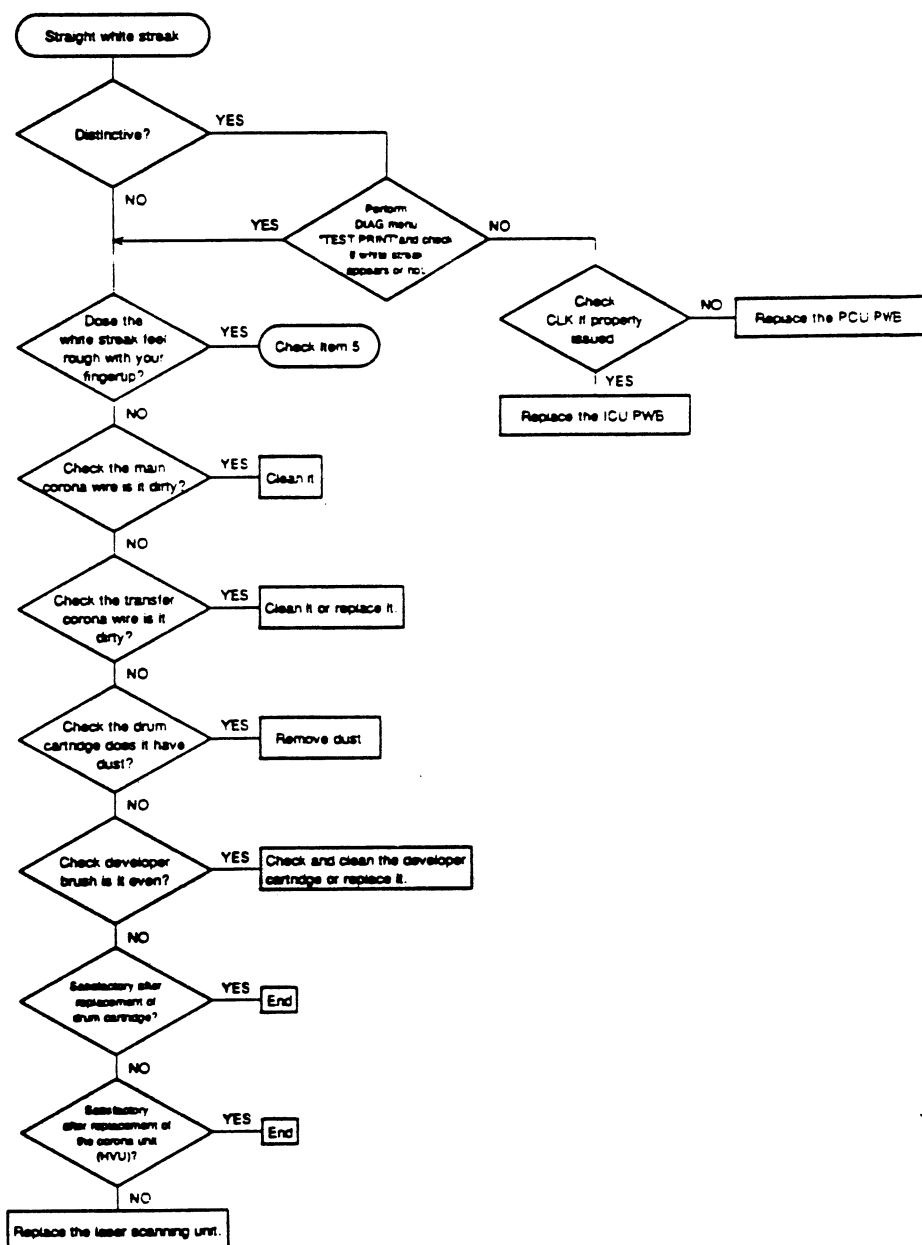
TROUBLESHOOTING

PRINT QUALITY TROUBLESHOOTING

Some print quality problems can be solved by cleaning the printer or by changing the paper being used. A check of charger wires for dirt and paper dust should be the first step in solving print quality problems. Damp, wrinkled, or torn paper also causes print quality and paper feeding problems.

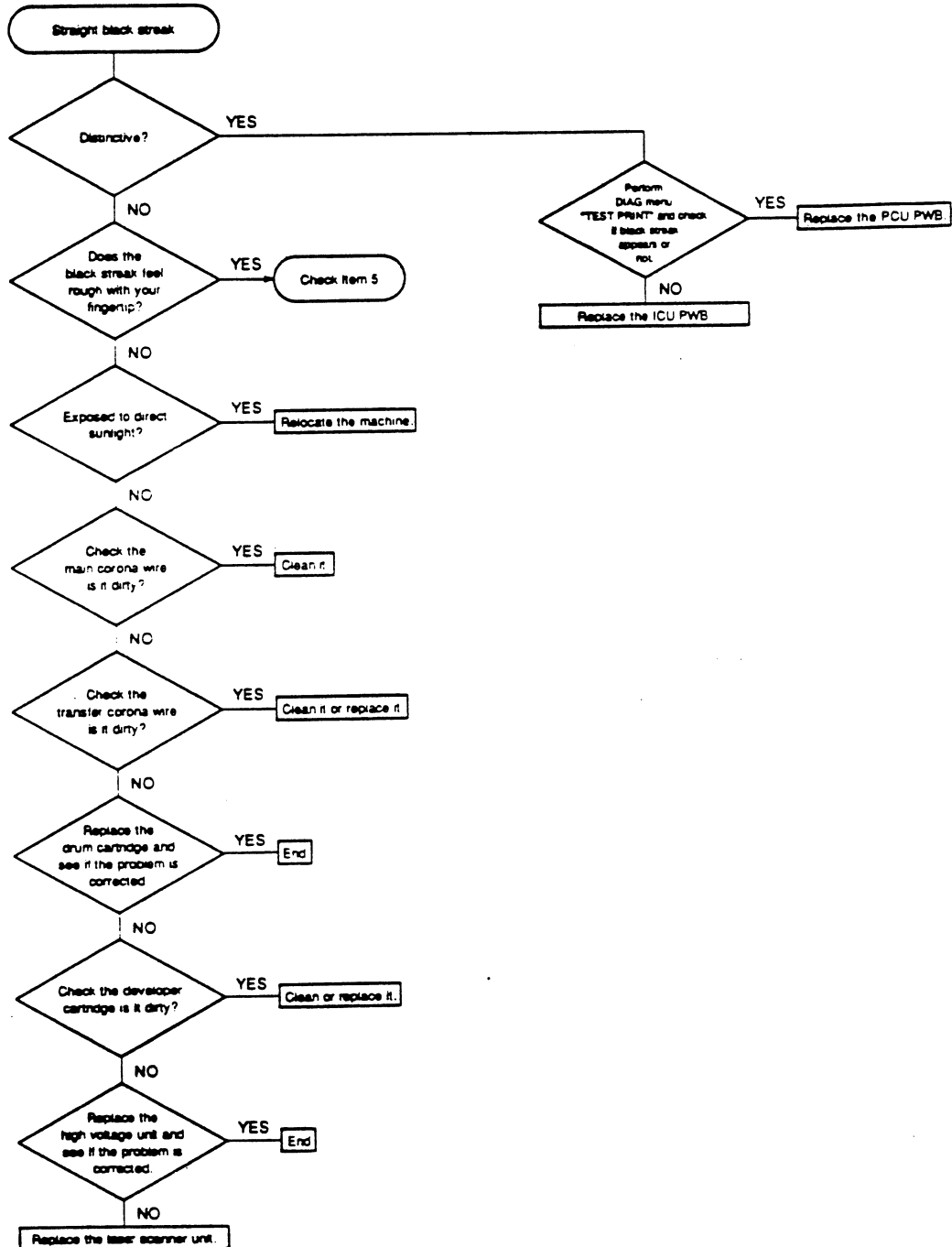
White lines appear vertically on print out.

White streaks or bands in the paper feeding direction.



Black lines appear vertically on print.

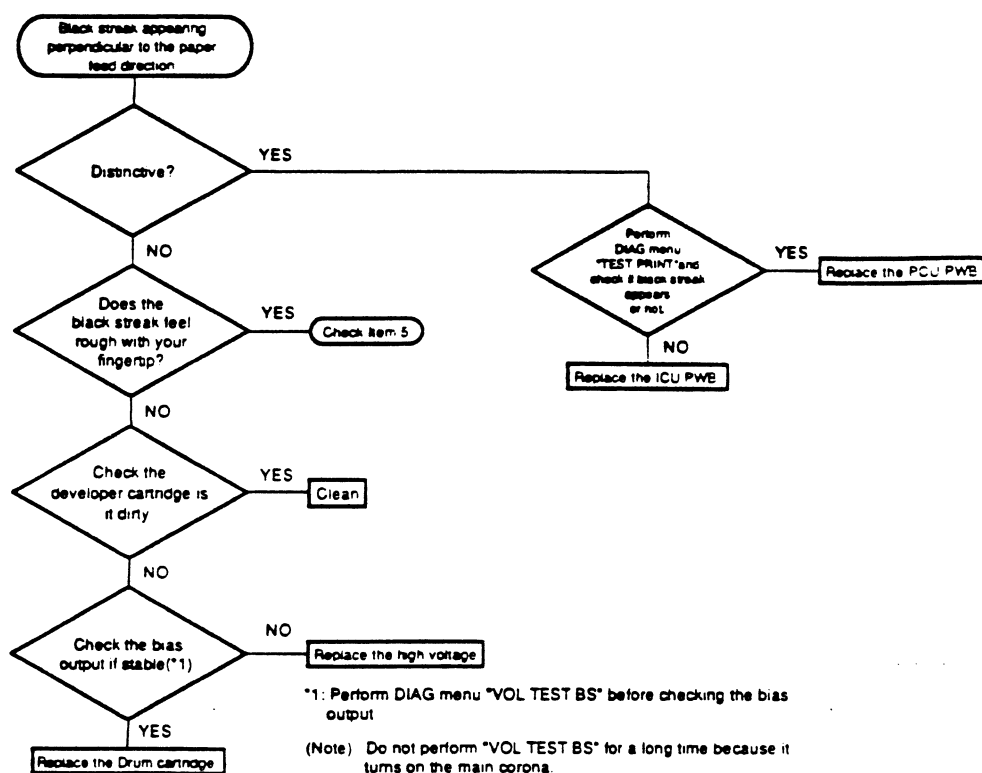
Streaks or bands in the paper feeding direction.



TROUBLESHOOTING

Black lines appear horizontally on print.

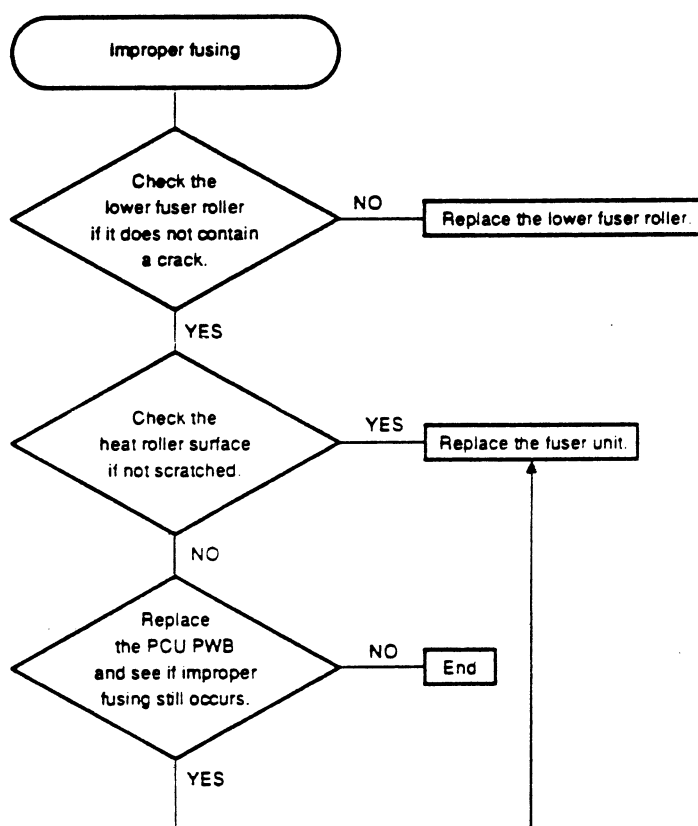
Black streaks or bands perpendicular to the paper feeding direction.



TROUBLESHOOTING

Poor fusing.

Printed image feels rough and toned image is easily rubbed off with your fingertip.



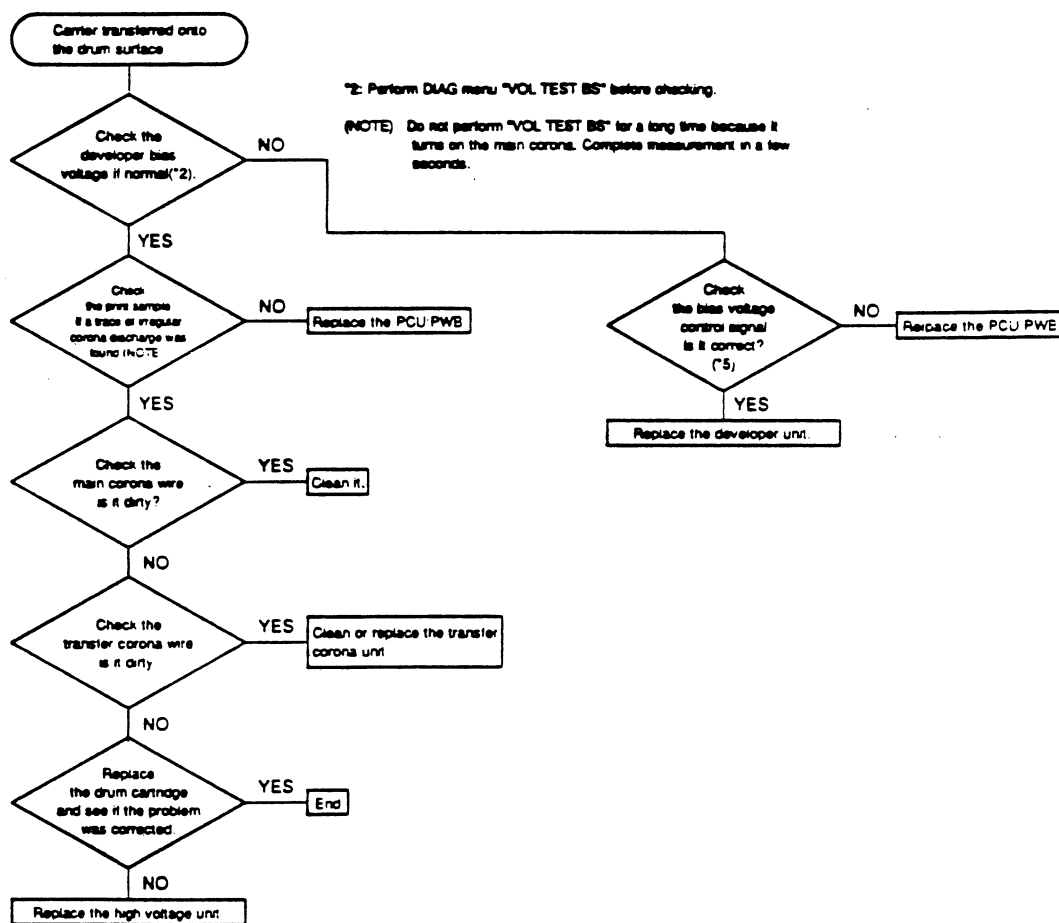
TROUBLESHOOTING

Carrier transferred onto the drum surface.

Printed image feels rough and toned image is easily rubbed off with your fingertip.

NOTE

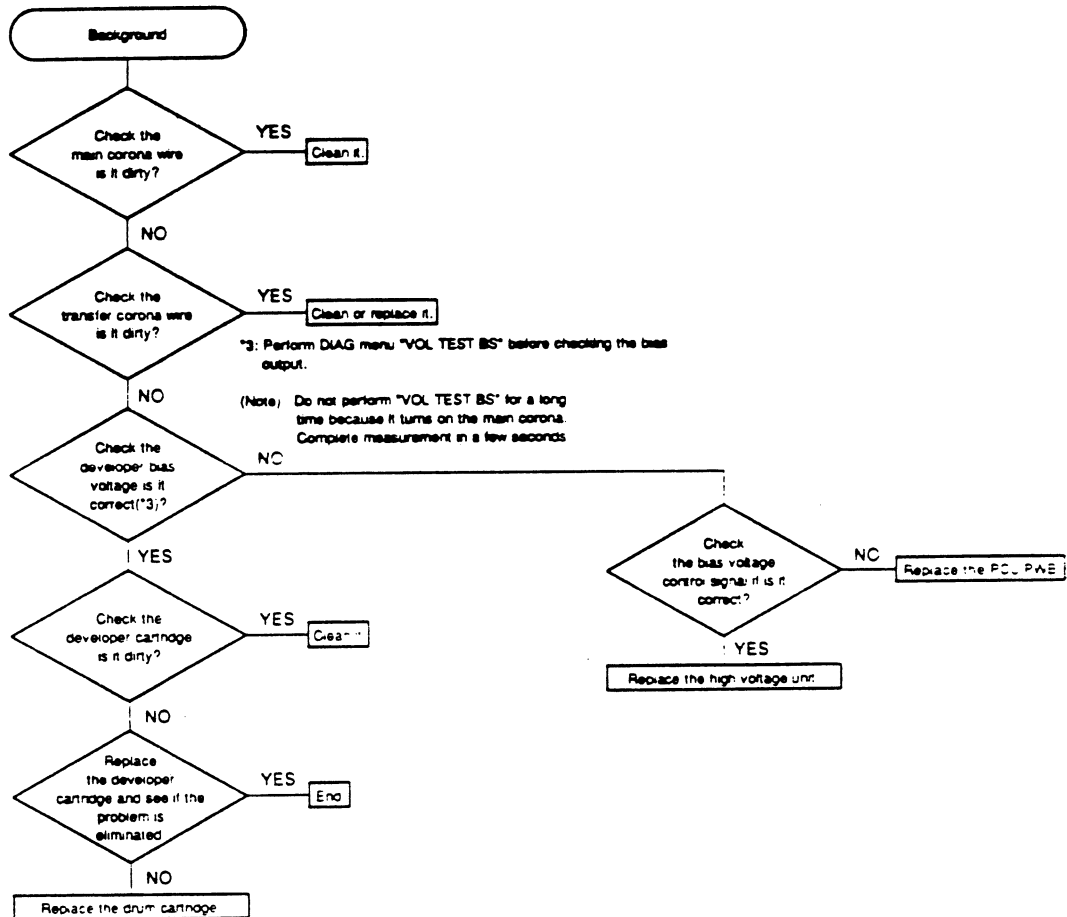
Black or white bands may appear in the paper feeding direction if the charger discharge is uneven.



TROUBLESHOOTING

Backgrounding.

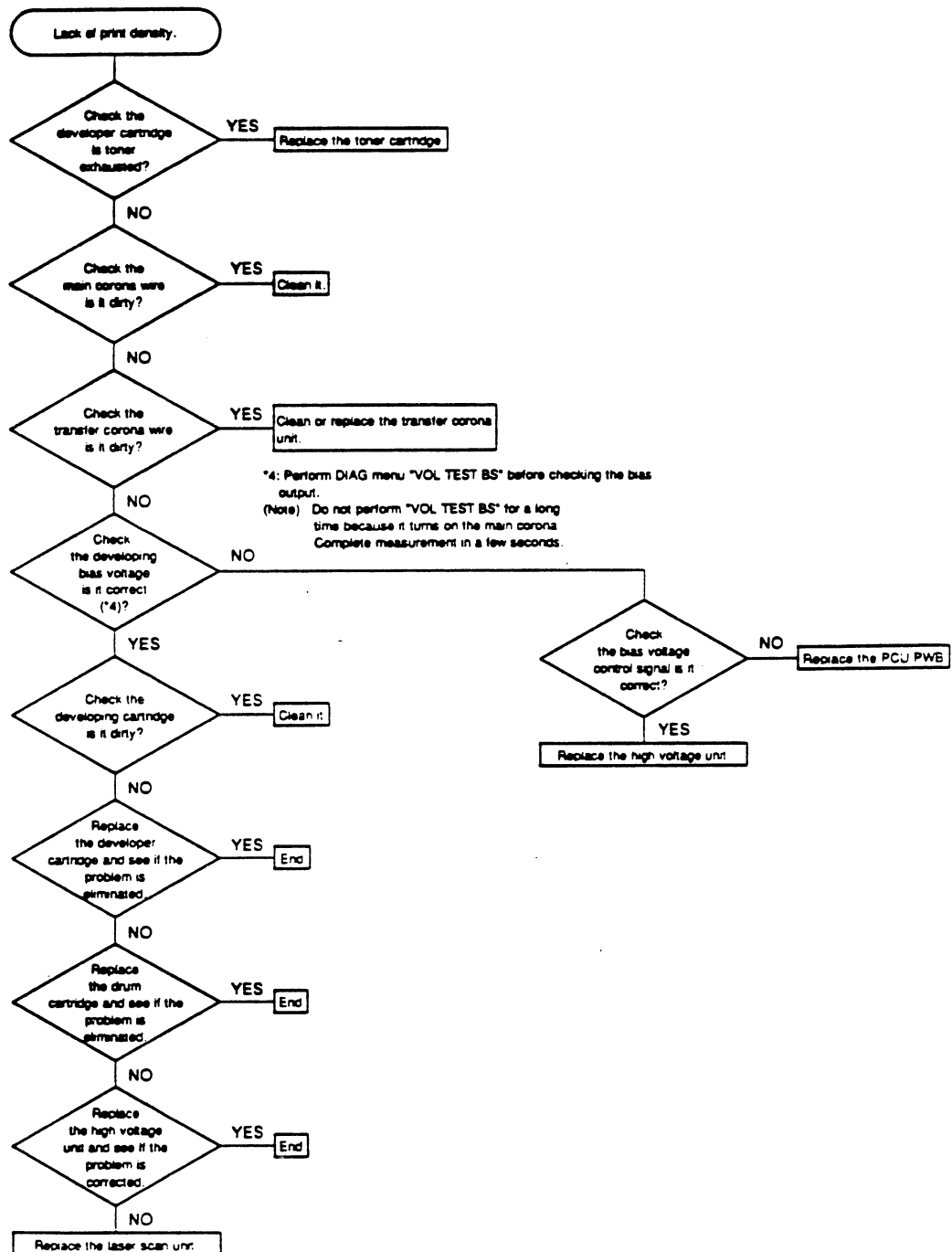
Grey tone on a part or on the entire area of print.



TROUBLESHOOTING

Lack of print density.

Extremely light print.



ERROR CODE TROUBLESHOOTING

This section will help you solve printer problems that are flagged by error messages or codes. Some error messages are correctible by the user or operator and a technician is needed only if these messages are continuous or appear to be false.

Operator Call Errors

COVER OPEN	Upper unit is open. Close the cover and push the CONTINUE/RESET key to cancel error status.
PAPER JAM	Paper has misfed inside the printer. Remove the jammed paper and push the CONTINUE/RESET key to cancel error status.
PAPER OUT	No paper loaded in the selected cassette or cassette not installed. Error status is canceled after loading paper in the cassette or installing the cassette if the paper-size matches the previous setting.
REPL. TONER KIT	Toner cartridge has reached the end of life or is not installed. Replace the toner cartridge with a fresh one or install the toner cartridge. Press the CONTINUE/RESET key to start supplying toner. If, the required toner concentration is not reached within two minutes, the prompt is displayed again.
REPL. PHOTO DRUM	Drum cartridge has reached its end of life or is not installed. Replace or install the drum cartridge. When a new cartridge is installed, a counter is automatically set to the life count. To continue printing until the toner cartridge expires, press the CONTINUE/RESET key to override the message.
REPL. DEVELOPER	Developer cartridge has reached its end of life or is not installed. Install the developer cartridge or replace it with a new one. When a new cartridge is installed, a counter is automatically set to the life count. To continue printing until the toner cartridge expires, press the CONTINUE/RESET key to override the message.
REPL. TONER COLL.	Used-toner collector is not installed or was not replaced when the toner cartridge was replaced. The printer will not operate until the collector is replaced.
INPUT BUFFER FULL	The printer is still receiving data while in a busy state. Check the protocol signal line from the computer or adjust the setting. Press the CONTINUE/RESET key to clear the error status.
FC MISMATCH ***	A font card is damaged, missing, or is mismatched with the selected emulation. Insert a normal font card or one matching the selected emulation. Press the CONTINUE/RESET key to clear the error status.

TROUBLESHOOTING

INTERFACE ERROR

A parity, framing or other error has occurred. Check the RS-232-C interface configuration and resend the data. Press the CONTINUE/RESET key to clear the error status..

DATA MEMORY FULL

The printer has run out of available memory. If on-line and printing, printing will continue on to the next page. While entering a soft font or macro, the printer will delete the currently loading soft font or macro and discard any more data sent. Pressing the CONTINUE/RESET key resumes operations.

To delete all temporary soft fonts and macros and place the printer back on-line, press and hold the CONTINUE/RESET key until RESET appears in the display. If condition occurs frequently, install a memory expansion card.

DATA LOSS ERROR

Too many characters have been sent for one line. Delete the excess characters and send again. Press CONTINUE/RESET key to clear the error status. Check the line termination configuration settings.

TROUBLESHOOTING

SERVICE TECHNICIAN CALL ERRORS

A service technician is required when one of the following errors is displayed.

P1 to P4	A fault in the PCU (process control unit).
C1 to C6	Printer mechanism fault.
E1 to E5	A fault in the ICU (interface control unit).

Error display	Error description
SERVICE (C1)	Optical System Error
SERVICE (C2)	Main Motor Defective
SERVICE (C3)	Polygon Motor Defective
SERVICE (C4)	High Heater Temperature
SERVICE (C5)	Low Heater Temperature
SERVICE (C6)	Thermistor Open
SERVICE (C7-C9)	(Reserved)
SERVICE (E1)	ICU ROM Checksum Error
SERVICE (E2)	ICU RAM Read/Write Error
SERVICE (E3)	Expansion Memory Error
SERVICE (E4)	ICU Hardware Read/Write Error
SERVICE (E5)	Non-volatile RAM Checksum Error
SERVICE (E6-E9)	(Reserved)
SERVICE (P1)	PCU ROM Checksum Error
SERVICE (P2)	PCU RAM Read/Write Error
SERVICE (P3)	Non-volatile RAM Read Error
SERVICE (P4)	Serial Communication Error
SERVICE (P5-P6)	(Reserved)

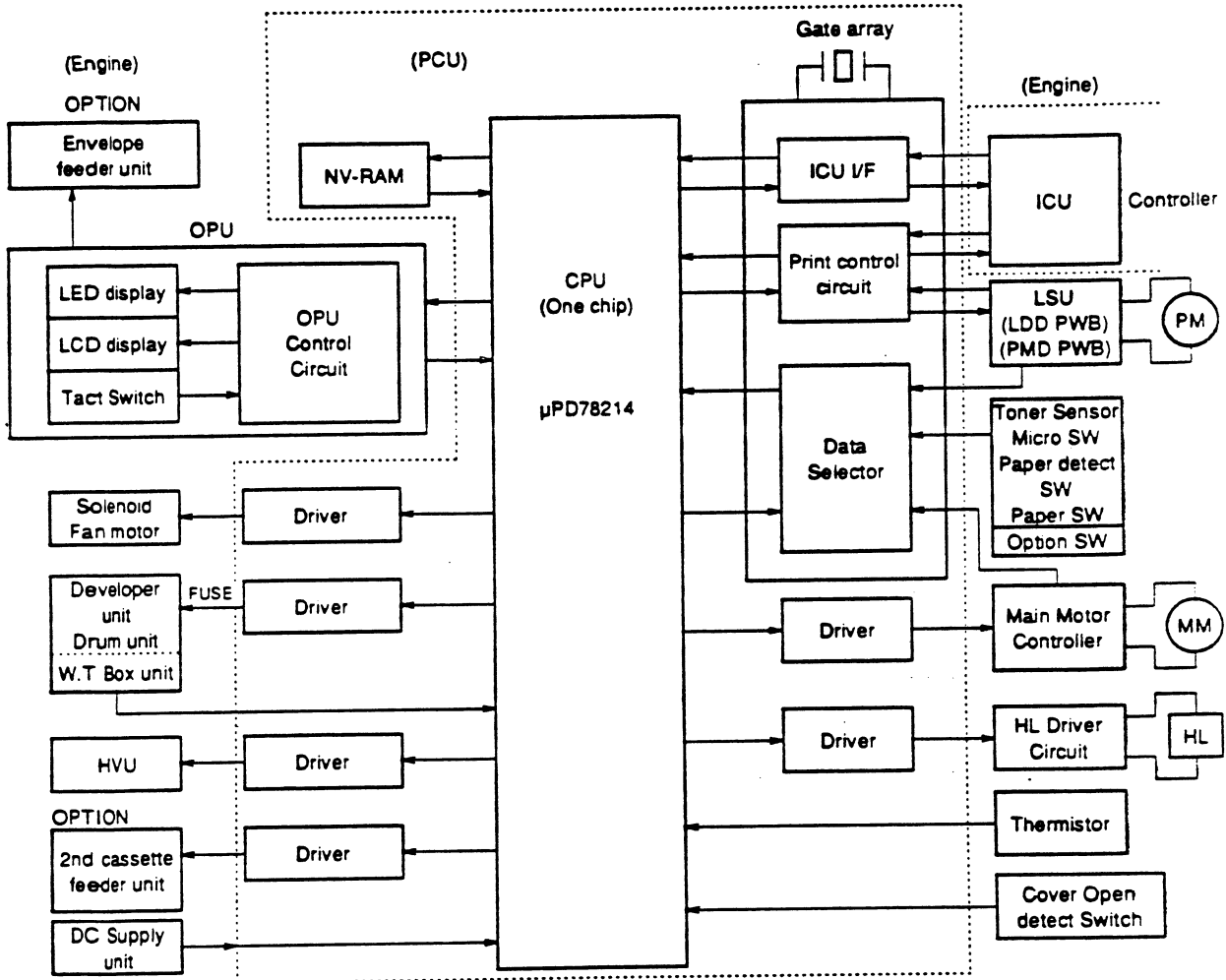
Message	Possible Cause	Action
COVER OPEN	Upper unit unlatched.	Close and latch upper unit.
	Upper frame installed incorrectly.	Reinstall upper frame.
	Upper unit switch installed incorrectly.	Reinstall switch.
	Upper unit switch defective.	Replace switch.
	CPU pin 51 voltage is not about 5V.	Replace PCU CCA.
PAPER JAM	Paper jammed in printer.	Remove jammed paper.
	Paper sensor installed incorrectly.	Reinstall paper sensor.
	Paper sensor defective.	Replace paper sensor.
	Signals at IC2 pins 26 or 27 (PCU CCA) are incorrect.	Replace PCU CCA.

TROUBLESHOOTING

PAPER OUT	Cassette out or empty. Paper out sensor installed incorrectly. Paper out sensor defective. Signal at IC2 pin 13 (PCU CCA) is incorrect.	Install cassette or paper. Reinstall paper out sensor. Replace paper out sensor. Replace PCU CCA.
SERVICE (P1)	PCU ROM checksum error.	Replace PCU CCA if CPU correct.
SERVICE (P2)	PCU RAM read/write error.	Replace PCU CCA if CPU correct.
SERVICE (P3)	NVRAM read error.	Replace PCU CCA if CPU OK.
SERVICE (P4)	Serial communication error.	Replace PCU CCA, ICU CCA, or Mother Board CCA.
SERVICE (C1)	Optical system failure. LDON and/or VIDEO signals not received correctly. SYNC signal abnormal.	Replace PCU CCA. Replace laser/optical unit.
SERVICE (C2)	Main motor failure. +24 volt failure. Motor drive circuit failure.	Replace power supply. Replace main motor.
SERVICE (C3)	Polygonal motor failure. +24 volt failure Motor drive circuit failure.	Replace power supply. Replace laser/optical unit.
SERVICE (C4)	Irregularly high heater temperature. Thermistor defective	Replace thermistor.
SERVICE (C5)	Irregularly low heater temperature. Thermistor defective. Heater lamp broken.	Replace thermistor. Replace heater lamp. Push thermostat reset button.
SERVICE (C6)	Open thermistor.	Replace thermistor or PCU CCA.
SERVICE (E1)	ICU ROM sumcheck error. Wrong ROM chip. ROM chip defective.	Replace ROM chip with correct one. Replace ROM chip.
SERVICE (E2)	ICU RAM read/write error. Wrong RAM chip. RAM chip defective.	Replace RAM chip with correct one. Replace RAM chip.
SERVICE (E3)	Expansion memory read/write error.	Replace expansion memory card.
SERVICE (E4)	ICU hardware error.	Replace ICU CCA.
SERVICE (E5)	ICU NVRAM sumcheck error.	Replace NVRAM chip. Short pin J3 and initialize.

BLOCK DIAGRAMS

Process Control Unit



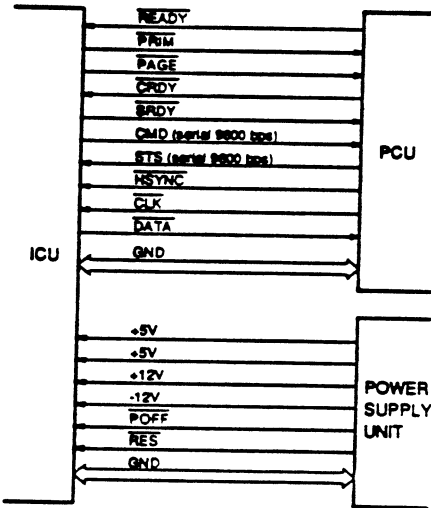
Legend:-

LSU: Laser scanning unit
 PCU: Process control unit
 LDD PWB: Laser diode drive printed wire board
 PMD PWB: Polygonal motor drive printed wire board
 HL: Heater lamp

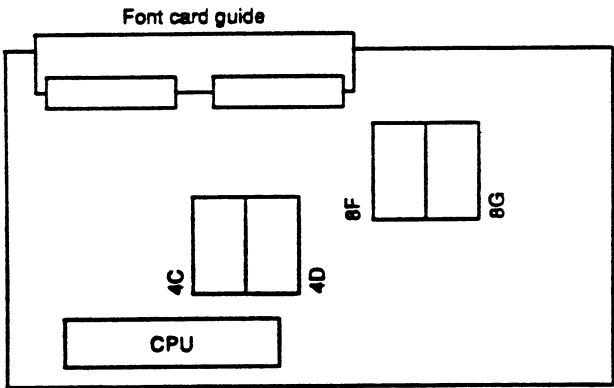
OPU: Operation unit
 HVU: High voltage unit
 ICU: Interface control unit

TROUBLESHOOTING

ICU Interface

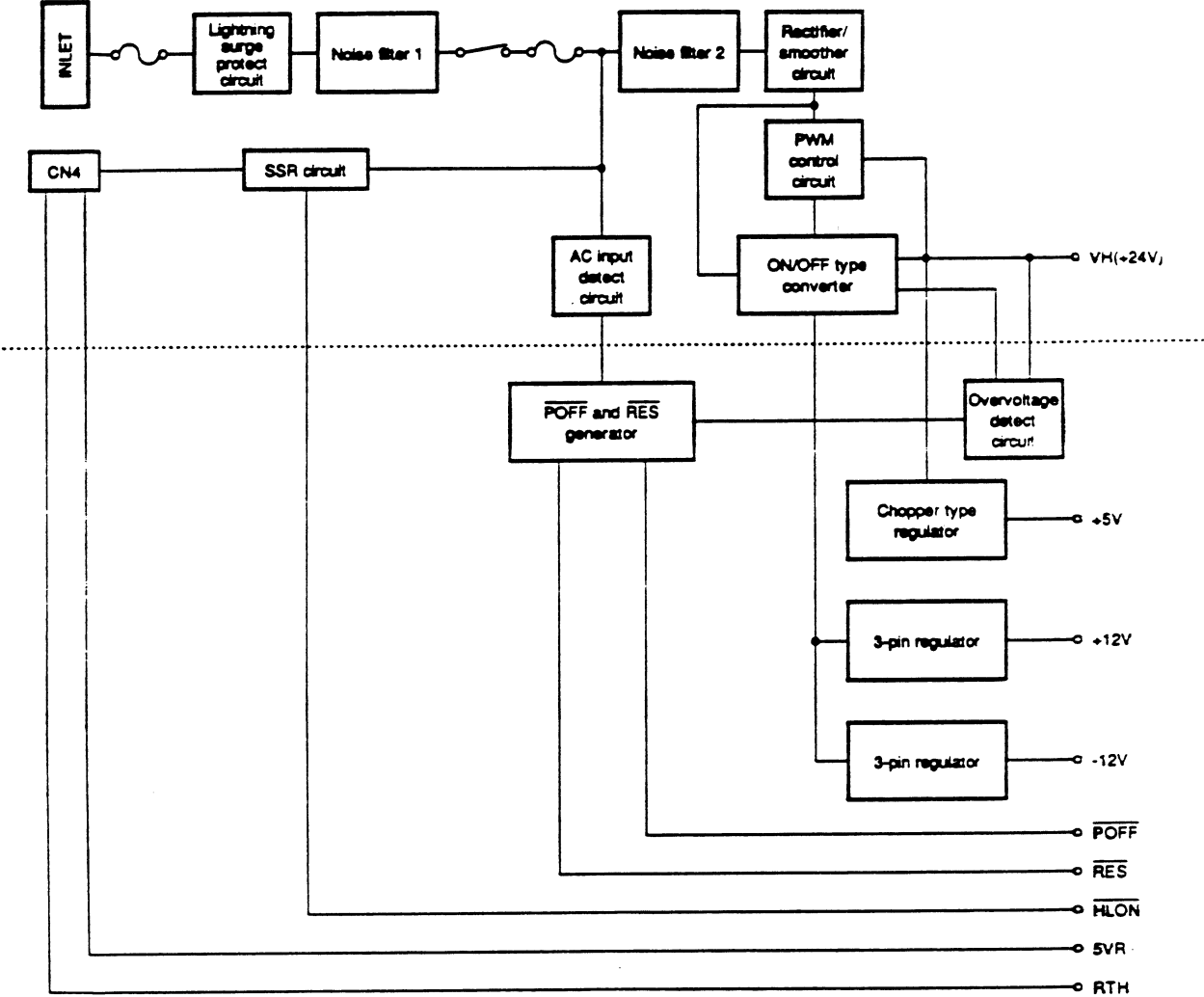


ICU CCA ROM Locations



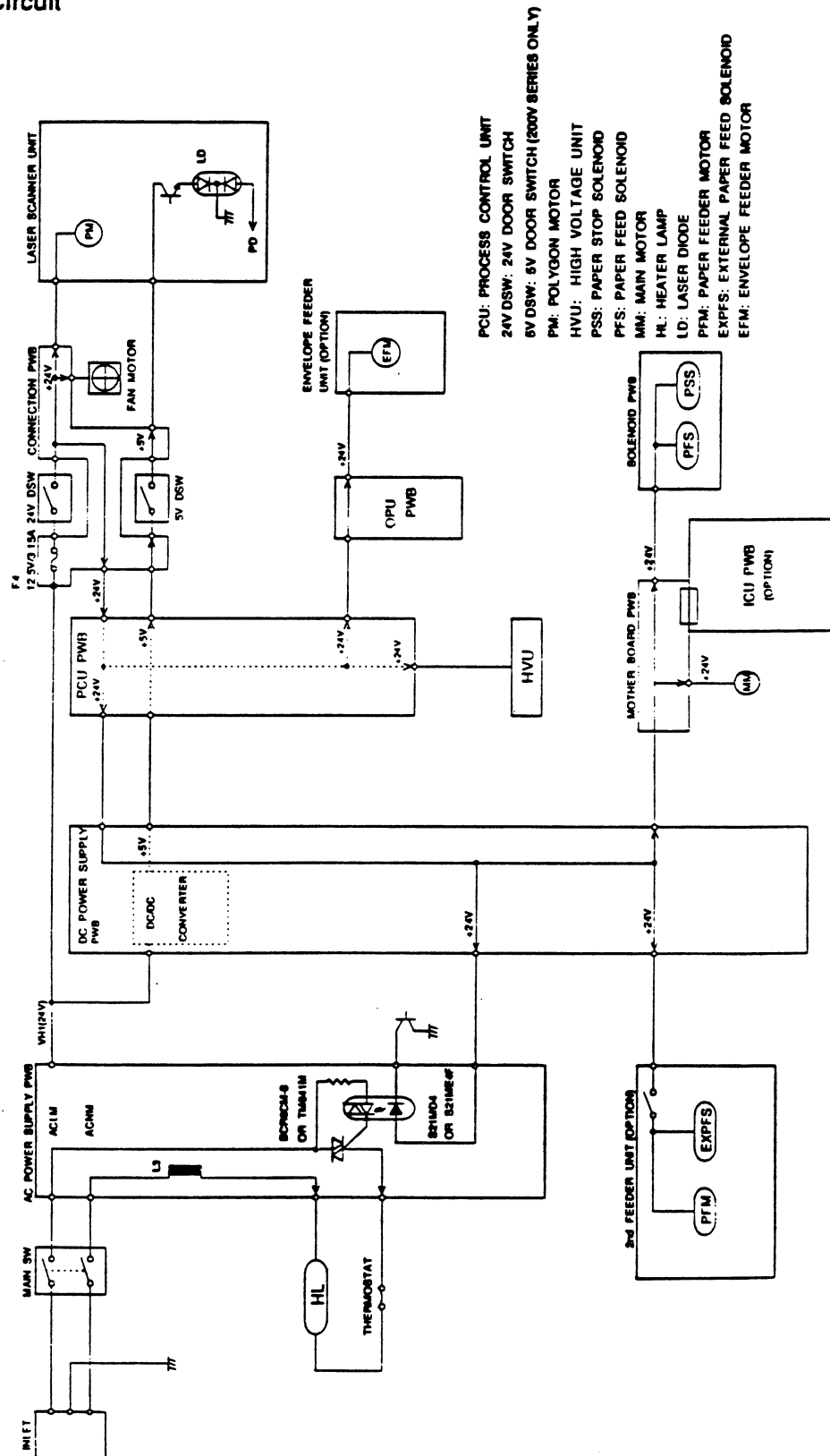
PARTS CODE	LOCATION	VERSION NO.	DESCRIPTION
	8G	ICG1	CG ROM
	8F	ICG2	CG ROM
	4D	CPR1	PROGRAM ROM
	4C	CPR2	PROGRAM ROM

Power Supply Circuit

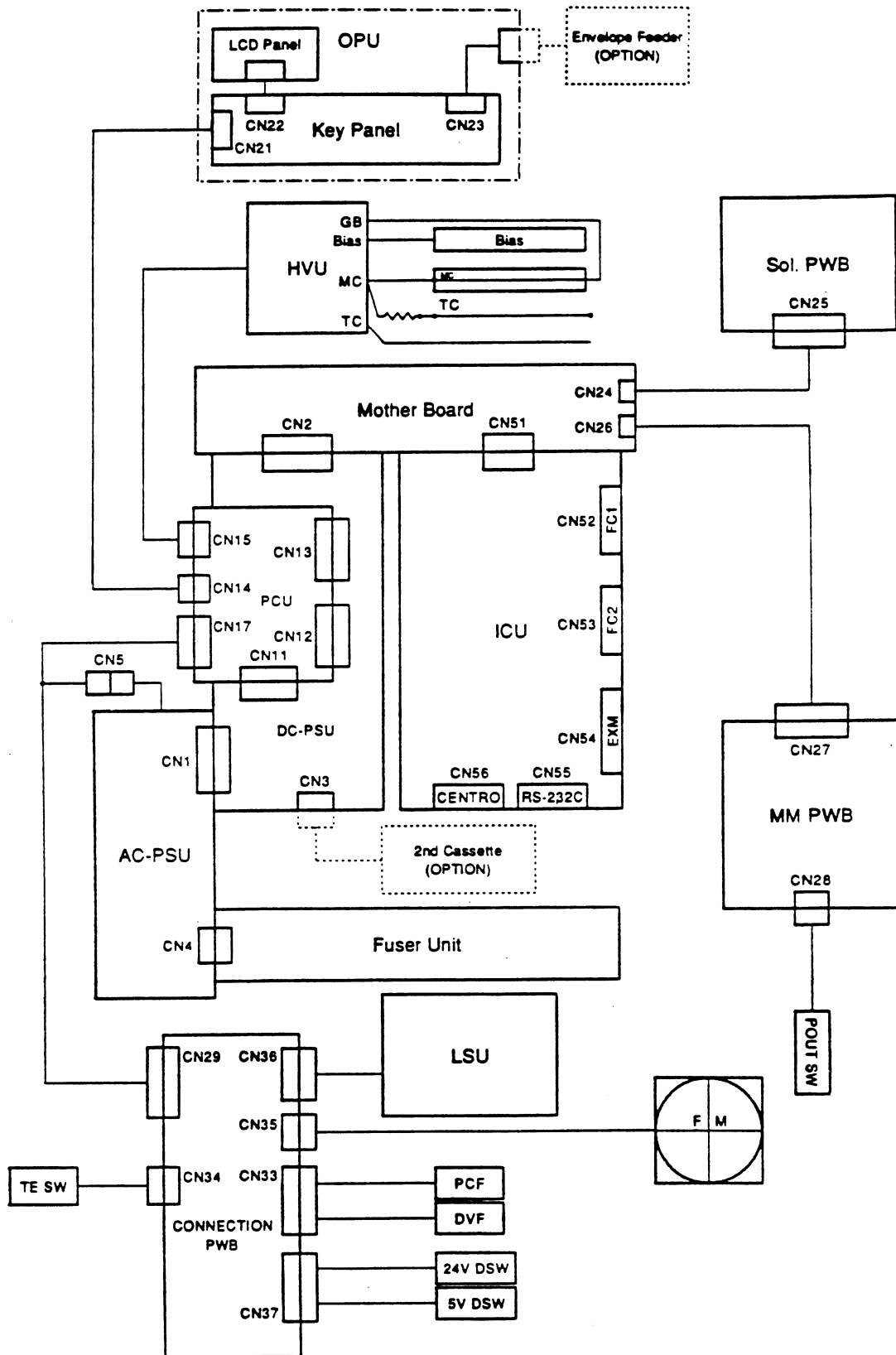


TROUBLESHOOTING

Interlock Circuit



Wiring Diagram



APPENDIX A. UNPACKING AND INSTALLATION

This appendix tells you how to select a location and install the printer. Read over *Location Requirements* before unpacking the printer.

LOCATION REQUIREMENTS

Please note the following requirements when installing the printer.

1. Avoid locations in direct sunlight or near a window. Direct sunlight may cause the plastic components to deform or discolor. Use a curtain or shade to block the light. Frosted glass may also produce the same effect.
2. Avoid locations that are hot, damp or where rapid changes in humidity occur (for example; near an air conditioner). This may cause paper to dampen or frost to occur inside the printer, and may lead to a misfeed and a deterioration in the print quality.
3. The recommended temperature and humidity is: 20 to 25° C (68 to 77° F), 65% + 5% RH. The nominal environment conditions are: 10 to 30° C. (40 to 86° F), 20 to 85% RH. If the temperature is 35° C (95° F), the humidity should be 60%.
4. Avoid installation in a place where dust or vibration is encountered. Dust deposits inside of the printer may lead to a deterioration of print quality or machine trouble.
5. Do not install the printer on an unstable or uneven surface. The printer must be placed on a level surface to permit proper functioning. The toner density and print quality may be affected unless the machine is installed in a level condition.
6. Avoid installation in a place where the ventilation or air circulation is poor.
7. Never install the printer near flammable materials or in the presence of ammonia fumes. Installation near a diazo copy machine may lead to a deterioration of print quality or a machine malfunction.
8. Install the printer near the wall outlet.
9. When installing, allow enough space around the printer for proper operations. Especially take note of the following:
 - Allow a space of 12 inches or more at the back of the printer for opening or closing the face-up exit tray when it is used.
 - Allow a space of 8 inches or more on the left side of the printer for ventilation by the cooling fan.

APPENDIX A

POWER SOURCE

The power supply line should have a capacity of more than 6A (120V), 3.2A (220V), 3.0A (240V), capable of supplying more than 90% of the rated voltage at full load.

Do not use an extension cord, or operate any other equipment from the same wall outlet.

Use a properly grounded (three prong) wall outlet only.

UNPACKING AND INSTALLATION PROCEDURES

The metallic surface of the printer might be frosted due to an abrupt temperature change when the machine is brought inside the room during cold weather and may lead to a paper misfeed or print quality deterioration. Leave the carton unopened in such a case and leave it in the room for more than one hour before opening the carton.

Unpacking

1. Place the carton where space is available for opening the package. Check the carton for damage.
2. Remove tape on the top part of the carton and open the top flap.
3. Remove the top packing and take out the accessory and supply packages.

The following accessories and supplies are included.

- AC power cord
- Paper cassette
- Operation manual
- Drum cartridge
- Developer cartridge
- Toner cartridge
- Used-toner collector
- Roller cleaner
- User's Manual
- Charger Cleaner (Save for cleaning the printer)

NOTE

Save the carton and packing materials to repack the printer in case it must be moved to another location or shipped for servicing.

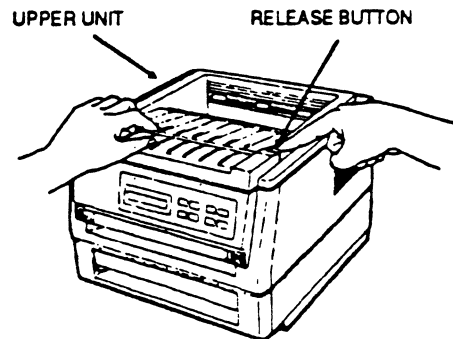
4. Remove the top cushion.
5. Lift out the printer.

INSTALL THE SUPPLIES

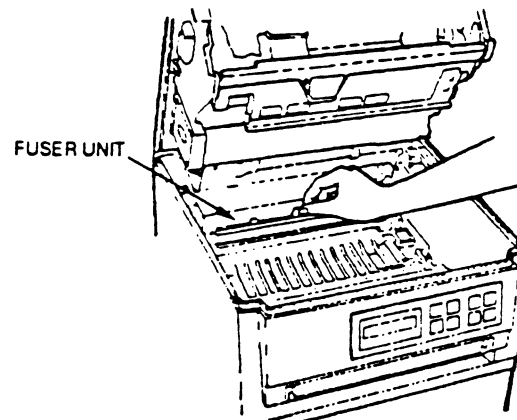
Roller Cleaner Installation

To install the roller cleaner:

1. Place pressure on the top of the printer with one hand and press the upper unit release button to open the printer.



2. Remove the roller cleaner from its plastic bag.
3. Insert the roller cleaner into the slot on the top of the fuser unit.

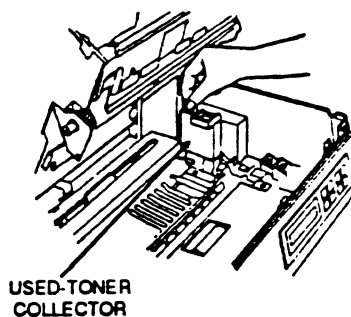


APPENDIX A

Used-Toner Collector Installation

To install the used-toner collector:

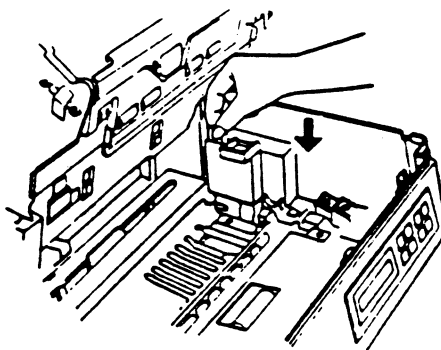
1. Place the used-toner collector in position in the base of the printer as shown.



2. Firmly press down on the top edge of the used-toner collector until it clicks in place.

CAUTION

Failure to fully seat the used-toner collector may result in damage to it when closing the upper unit.



Drum Cartridge Installation

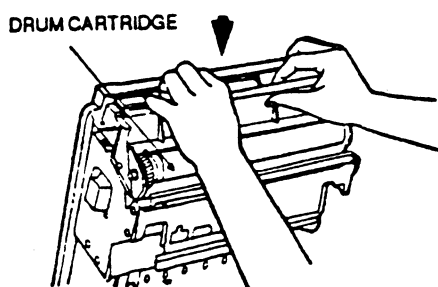
To install the drum cartridge:

1. Remove the drum cartridge from its wrapping.

CAUTION

Do not touch the drum surface. Scratches or smudges on the drum will cause dirty printouts.

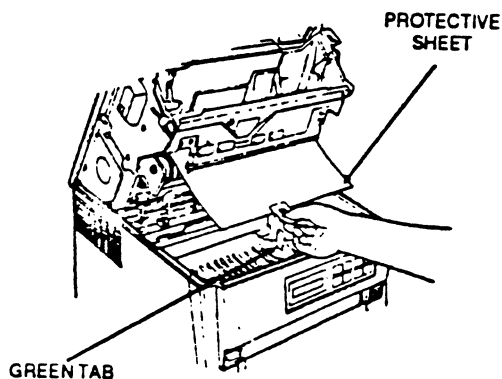
2. With the drum facing down, insert the drum cartridge into the upper unit and slide it down along the guides.



3. Hold the drum cartridge and upper unit steady and pull the green tab to remove the drum's protective sheet.

CAUTION

After the protective sheet is removed, do not expose the drum to excessive light. When removing it from the printer for servicing or maintenance, place the drum in the original wrapping or in a dark place.

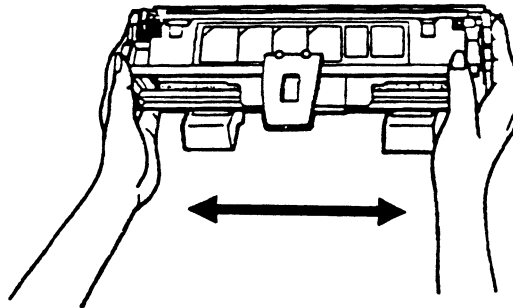


APPENDIX A

Developer Cartridge Installation

To install the developer cartridge:

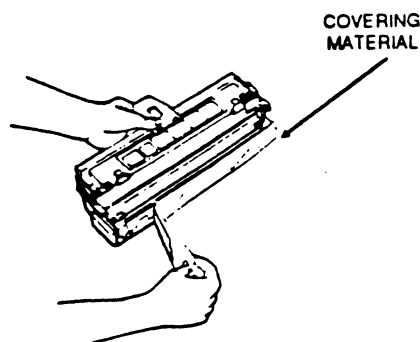
1. Carefully remove the developer cartridge from its wrapping.
2. Shake the developer cartridge vigorously from side to side four or five times.



3. Place the developer cartridge on a level surface.
4. Hold the cartridge and pull the tab on the covering material as shown to remove it. Be careful not to touch the developer roller.

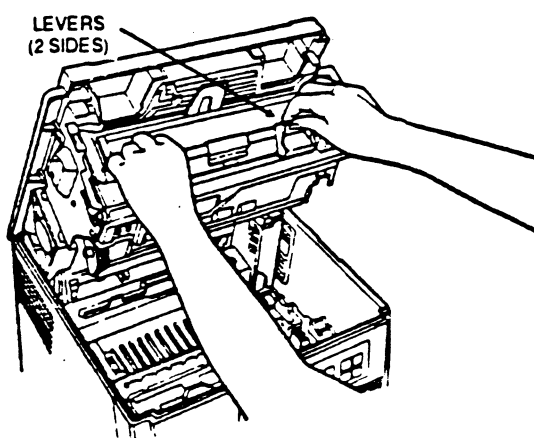
CAUTION

Do not remove the sealing plate from the opposite side of the developer cartridge at this time.

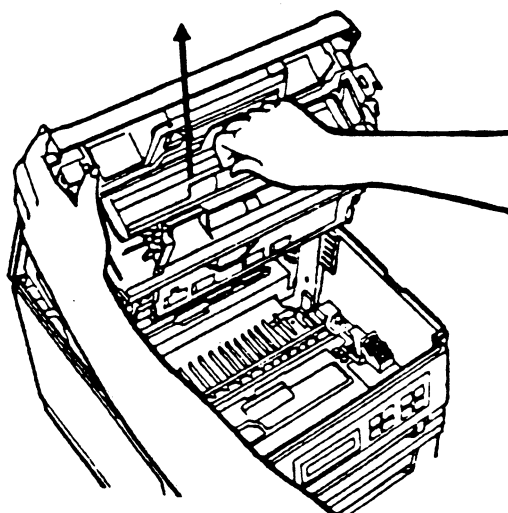


APPENDIX A

5. Push up on the two levers on the developer cartridge and slide it along the guides into the upper unit.



6. Pull upward on the tab on the sealing plate tape as shown to remove the sealing plate.

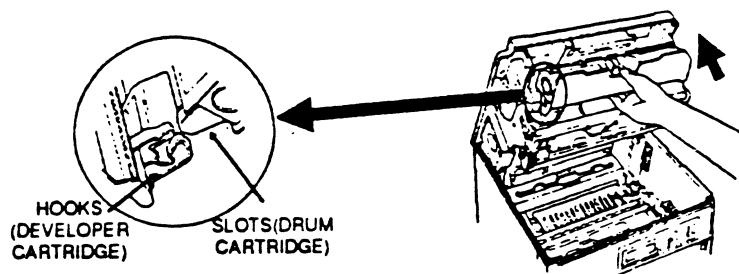


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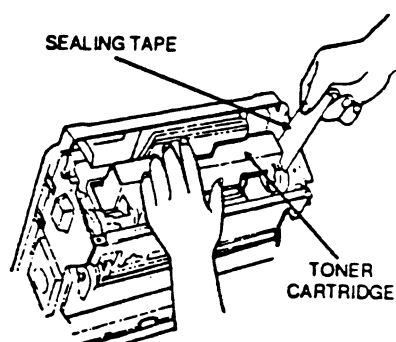
Toner Cartridge Installation

To install the toner cartridge:

1. Shake the toner cartridge horizontally four or five times.
2. Align the toner cartridge slots with the developer cartridge hooks, and swing the toner cartridge upward until it is locked in place by the green lever on the developer cartridge.



3. Hold the toner cartridge and pull slowly, but firmly, outward on the sealing tape tab to remove it from the toner cartridge.



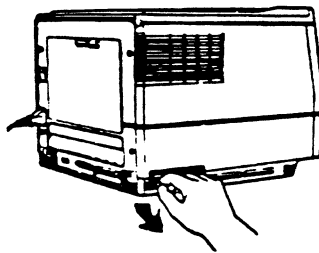
4. Tap on the toner cartridge four or five times to release all the toner into the developer cartridge.
5. Press down on the upper unit to close the printer.

INSTALL THE EXPANSION MEMORY CARD (OPTION)

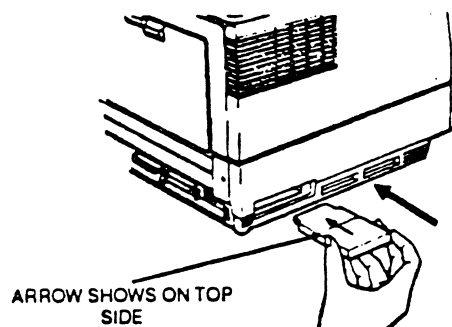
Expansion memory cards with 0.5, 1.0, 1.5, 2.5, or 4 megabytes of memory are available as options. When installing the expansion memory card, turn off the printer if it is on. **DO NOT INSTALL THE EXPANSION MEMORY CARD WHILE THE PRINTER IS TURNED ON.**

To install the expansion memory card during printer setup:

1. Locate the expansion memory card cover on the bottom left-hand side of the printer.
2. Push the cover tab to the right and pull outward to remove the cover.



4. Insert the expansion memory card, with the arrow facing up, all the way into the slot.



5. Slide the right edge of the expansion cover into its slot and then push in on the tab edge until it snaps in place.

NOTE

If the cover cannot be closed, the expansion memory may be improperly inserted (upside down).

APPENDIX A

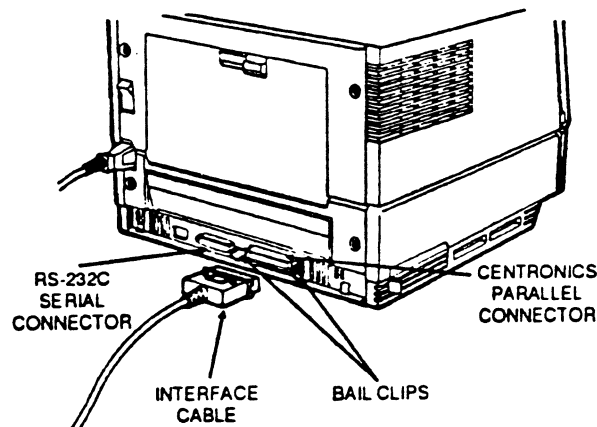
CONNECT THE INTERFACE CABLE

The printer is equipped with both a Centronics parallel and a RS-232C serial interface. The printer has been set at the factory for the Centronics parallel interface. To use the RS-232C serial interface, you must enter the Configuration Menu and select the serial interface. See the User's Manual for instructions on changing menu settings.

NOTE

A shielded, grounded cable and connector are required to comply with either FCC Class B or VDE 0871 and 0875 requirements. Cable specifications are given in Appendix D.

1. Remove the cover from the desired connector. (Leave the other cover in place to prevent accidental contact, and damage from static electricity.)
2. Plug the cable into the connector.

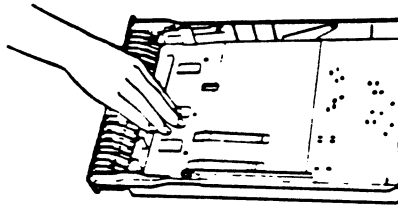


3. Fasten the bail clips for the parallel connector, or secure the two screws for the serial connector.
4. Plug the power cord, which was in the shipping carton, into the power connector on the printer.

LOADING PAPER

The paper cassette automatically feeds the paper and can hold about 250 sheets of standard weight paper (16 to 21 lbs. or 60 to 80 g/m²).

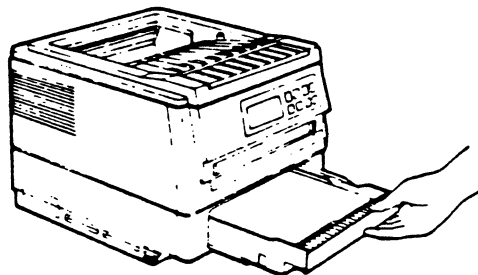
1. If you are just setting up the printer, remove the tape from the front of the cassette.
2. Lift up slightly on the front of the paper cassette and pull it straight out to remove it.
3. If you are just setting up the printer, remove the tape from inside the cassette.
4. Push down on the cassette pressure plate until it locks into position if needed.



5. Fan up to 250 sheets of standard paper before placing it in the cassette with the corners under the metal corner tabs.
6. Shake the paper cassette gently to straighten the paper. Note that the side facing down is the printing side.



7. Slide the paper cassette into the printer until it clicks in place.



APPENDIX A

TESTING THE PRINTER

After you have set up the printer, the self-tests should be performed to check printer operation. The two self-tests and the font printout not only test the printer, but also tell you about its current operating parameters.

SELF TEST #1 prints the current settings of the Printing and Configuration Menus items. In this case, it will show the factory default settings. SELF TEST #2 prints an entire sheet of characters in a test pattern using the internal character set. The Font Printout lists the fonts available for the selected emulation (factory default is HP LaserJet Series II). Font ID numbers, description, and source are included in the list.

To perform these tests, check that the:

- supplies are installed.
- paper cassette is loaded with letter size paper.
- printer is connected to the correct power outlet. (A computer is not required for these tests.)

NOTE

In this manual, all values given in display messages will vary according to the current configuration and settings.

Enter the Self-Test Mode

1. Press the power switch to turn on the power.

CAUTION

Do not switch the printer rapidly on and off. After turning the printer off, wait 10 to 15 seconds before turning it back on.

- WARMING UP appears briefly on the display.
- In about 60 seconds, the ON LINE indicator lights, the READY indicator lights, and READY [LJ2] T appears in the display.

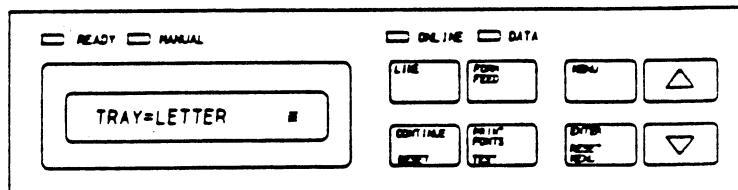
NOTE

The message shows the selected emulation and paper source. [LJ2] is HP LaserJet Series II, and T is the standard cassette. These are the factory default settings.

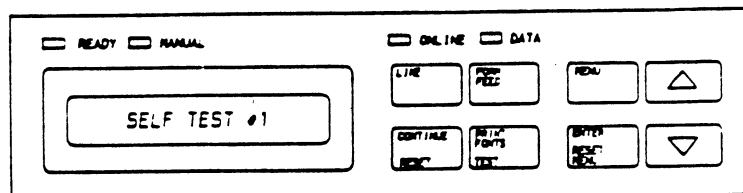
2. Press the LINE key to set the printer off-line.
 - The ON LINE indicator turns off.
 - TRAY=LETTER * appears on the display.

NOTE

If a cassette is not installed, PAPER OUT TRAY appears in the display. Install the paper cassette to continue. In some cases, TRAY=---- may appear. Install the cassette or insert paper into the manual feed slot.



3. Press and hold the PRINT FONTS/TEST key until the display shows SELF TEST #1.
 - The DATA indicator lights and printing begins.
 - A Menu Setting List (e.g. type of interface, emulation, etc.) is printed, and the DATA indicator turns off. Check that the printout is similar the one shown on the next page.
 - When printing is complete, TRAY=LETTER * appears on the display.



SELF-TEST #1-MENU SETTING LIST (SAMPLE)

MENU SETTING LIST	
Printing Menu	
Copies	= 1
Font Source	= B Slot Font Card
Font Number	= 01
Form Length	= 60 Lines
Configuration Menu	
Symbol Set	= ISO-21
Interface	= Parallel
Timing	= 1
Emulation	= HP LaserJet series II
Other Information	
Feed Select	= Tray
Tray Paper Size	= Letter
Current Font ID	= None
Current Typeface	= Tms Rmn
Program ROM	= CS16-3
Internal Font ROM	= ICG1A, ICG2A
PCU Firmware	= PCU-F
Installed Memory	= 512 Kbytes
Life Count Remaining	
Machine	= 191004 Sheets
Photoconductor	= 41004 Sheets
Developer	= 16004 Sheets

- (



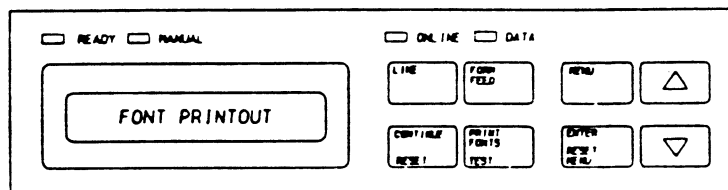
2

APPENDIX A

5. Press the PRINT FONTS/TEST key. The display will show FONT PRINTOUT.
 - The DATA indicator lights and printing begins.
 - The font list is printed out, and the DATA indicator goes out. Check that the printout is similar to the sample shown on the following two pages.
 - When printing is complete, TRAY=LETTER * appears on the display.

NOTE

Soft fonts appear on the list only after they have been downloaded or copied to the printer. For font card fonts to appear on the list, the cards must be installed..



6. When testing is complete, press the LINE key to set the printer on-line. If you had any problem running the self-tests, call the dealer or distributor who sold you the printer.

APPENDIX A

FONT LIST PRINTOUT

FONT No.	NAME	FONT ID	SYMBOL SET	PITCH	POINT SIZE	PRINT SAMPLE
SOFT FONTS (PERMANENT) FONT SOURCE (S)						
SOFT FONTS (TEMPORARY)						
A SLOT FONT CARD FONT SOURCE (A)						
00	Helv	Bold	0U	PS	14.4	ABCdef#S@[\]^'{}~12
01	Tms Rmn		0U	PS	10.1	ABCdef#S@[\]^'{}~12
02	Tms Rmn	Bold	0U	PS	10.1	ABCdef#S@[\]^'{}~12
03	Tms Rmn	Italic	0U	PS	10.1	ABCdef#S@[\]^'{}~12
04	Tms Rmn	Light	0U	PS	7.9	ABCdef#S@[\]^'{}~12
05	Line Printer	Light	8U	16.7	8.5	ABCdef#S@[\]^'{}~12
B SLOT FONT CARD FONT SOURCE (B)						
00	Tms Rmn		8U	PS	10.0	ABCdef#S@[\]^'{}~12
01	Tms Rmn		0U	PS	10.0	ABCdef#S@[\]^'{}~12
02	Tms Rmn		0E	PS	10.0	ABCdef#S@[\]^'{}~12
03	Tms Rmn	Bold	0U	PS	10.0	ABCdef#S@[\]^'{}~12
04	Tms Rmn	Bold	8U	PS	10.0	ABCdef#S@[\]^'{}~12
05	Tms Rmn	Bold	0E	PS	10.0	ABCdef#S@[\]^'{}~12
06	Tms Rmn	Italic	0U	PS	10.0	ABCdef#S@[\]^'{}~12
07	Tms Rmn	Italic	8U	PS	10.0	ABCdef#S@[\]^'{}~12
08	Tms Rmn	Italic	0E	PS	10.0	ABCdef#S@[\]^'{}~12
09	Helv	Bold	0U	PS	14.4	ABCdef#S@[\]^'{}~12
10	Helv	Bold	8U	PS	14.4	ABCdef#S@[\]^'{}~12
11	Helv	Bold	0E	PS	14.4	ABCdef#S@[\]^'{}~12
12	Tms Rmn		0U	PS	8.0	ABCdef#S@[\]^'{}~12
13	Tms Rmn		8U	PS	8.0	ABCdef#S@[\]^'{}~12
14	Tms Rmn		0E	PS	8.0	ABCdef#S@[\]^'{}~12
15	Line Printer		8U	16.7	8.5	ABCdef#S@[\]^'{}~12
16	Line Printer		0U	16.7	8.5	ABCdef#S@[\]^'{}~12
17	Line Printer		0E	16.7	8.5	ABCdef#S@[\]^'{}~12
INTERNAL FONTS FONT SOURCE (I)						
00	COURIER		8U	10.0	12.0	ABCdef#S@[\]^'{}~12
01	COURIER		10U	10.0	12.0	ABCdef#S@[\]^'{}~12
02	COURIER		11U	10.0	12.0	ABCdef#S@[\]^'{}~12
03	COURIER		0N	10.0	12.0	ABCdef#S@[\]^'{}~12

APPENDIX A

FONT LIST PRINTOUT

FONT No.	NAME	FONT ID	SYMBOL SET	PITCH	POINT SIZE	PRINT SAMPLE
<u>INTERNAL FONTS</u>		<u>FONT SOURCE (I)</u>				
16	COURIER	Bold	8U	10.0	12.0	A A B C d e f i j k l m n o p q r s t u v w x y z A A . 0 1 2 3 4 5 6 7 8 9
17	COURIER	Bold	10U	10.0	12.0	A A B C d e f i j k l m n o p q r s t u v w x y z A A . 0 1 2 3 4 5 6 7 8 9
18	COURIER	Bold	11U	10.0	12.0	A A B C d e f i j k l m n o p q r s t u v w x y z A A . 0 1 2 3 4 5 6 7 8 9
19	COURIER	Bold	0N	10.0	12.0	A A B C d e f i j k l m n o p q r s t u v w x y z A A . 0 1 2 3 4 5 6 7 8 9
20	LINE PRINTER		8U	16.7	8.5	A A B C d e f i j k l m n o p q r s t u v w x y z A A . 0 1 2 3 4 5 6 7 8 9
21	LINE PRINTER		10U	16.7	8.5	A A B C d e f i j k l m n o p q r s t u v w x y z A A . 0 1 2 3 4 5 6 7 8 9
22	LINE PRINTER		11U	16.7	8.5	A A B C d e f i j k l m n o p q r s t u v w x y z A A . 0 1 2 3 4 5 6 7 8 9
23	LINE PRINTER		0N	16.7	8.5	A A B C d e f i j k l m n o p q r s t u v w x y z A A . 0 1 2 3 4 5 6 7 8 9
24	COURIER		1G	10.0	12.0	A B C d e f i j k l m n o p q r s t u v w x y z A B C d e f i j k l m n o p q r s t u v w x y z
25	COURIER	Bold	1G	10.0	12.0	A B C d e f i j k l m n o p q r s t u v w x y z A B C d e f i j k l m n o p q r s t u v w x y z
26	LINE PRINTER		1G	16.7	8.5	A B C d e f i j k l m n o p q r s t u v w x y z A B C d e f i j k l m n o p q r s t u v w x y z
27	COURIER		1G	10.0	12.0	A B C d e f i j k l m n o p q r s t u v w x y z A B C d e f i j k l m n o p q r s t u v w x y z
28	COURIER	Bold	1G	10.0	12.0	A B C d e f i j k l m n o p q r s t u v w x y z A B C d e f i j k l m n o p q r s t u v w x y z
29	LINE PRINTER		1G	16.7	8.5	A B C d e f i j k l m n o p q r s t u v w x y z A B C d e f i j k l m n o p q r s t u v w x y z

FEBRUARY 1990

RECOMMENDED SPARE PARTS LIST - PRELIMINARY

DESCRIPTION	NOTES	REF CIB No	QTY/MACH	TRAVELLER		SERVICE CENTRE		DEPOT QTY (101-250)	REPAIRABLE
				QTY (1-20)	units	QTY (21-100)	units	units	
Power Unit AC European			1	1		2		3	NO
Power Unit DC			1	0		1		2	NO
High Voltage Unit European			1	1		2		3	NO
Motor Assy, Main			1	0		1		2	NO
Motor Assy, Fan			1	0		1		2	NO
PWB Unit Operator Control Panel			1	1		2		3	YES
PWB Unit PCU			1	1		2		3	YES
PWB Unit ICU			1	1		2		3	YES
Fusing Unit European			1	0		0		1	NO
Laser Unit			1	0		1		2	NO
Door Switch European			1	1		2		3	NO
Paper Out Switch			1	1		2		3	NO
Toner Sensor			1	1		2		3	NO
Fuses Kit			1	1		1		2	NO
Heater Lamp European			1	1		2		3	NO
TC Case A Assy.(Charger Wire)			2	1		2		2	NO
Kit, Belt			1	0		1		2	NO
Kit, Rear Unit Gear			1	0		0		1	NO
Kit, Main Drive Gear			1	0		0		1	NO
LCD Unit			1	1		2		3	